AMERICAN GAS ASSOCIATION MONTHLY

July 1927

Volume IX Number 7

Increasing the Revenue from Apartments
By Roy G. Munroe

Nominations for A. G. A. Officers

Welded Line Carries Gas Through Canal
By W. S. Dillon

The Importance of the Local Market Survey
By Prof. George Burton Hotchkiss

Mixed Gas Research Work Progresses
By G. B. Shawn

Industrial Inspection Trips to Be Arranged for Those Attending Convention

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By Geo. B. Cortelyou

President, Consolidated Gas Company of New York

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Stevens Hotel
October 10-14

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Our Own Who's Who

XXVI

A. B. Tenney

BORN January 8, 1873, in Everett, Mass. Entered Massachusetts Institute of Technology in 1890; graduated in 1894 with a degree of B.S.B., Sc. in Mechanical Engineering. From 1894 to 1900 was engaged in various engineering problems. In 1900 became affiliated with the Malden Electric Company, which was the beginning of the activities which later grew into and is known today as the Charles H. Tenney & Company. From the position of superintendent of the Suburban Gas & Electric Company in 1900 became actively engaged in the various companies as they were added to the so-called "Tenney Group." Now serving as president of many of the companies, vice-president of others and vice-president of the Charles H. Tenney & Company. Has for many years been an active member of the directorate of several commercial and industrial corporations.

AMERICAN GAS ASSOCIATION MONTHLY

Vol. IX JULY, 1927 No. 7

The Convention City as a Gas City

Paragraphs of Gas Progress in Chicago of Interest to All Planning to Be There the Week of October 10

THESE excerpts and abstracts from the year book of The Peoples Gas Light and Coke Company, portraying Chicago as a gas city, give thumb-nail sketches of the city where all gas men will meet for the Ninth Annual Convention of the A. G. A. from October 10 to 14.

"Total sales to relatively small users of gas increased five per cent in 1926 over 1925. Sales for house heating show a remarkable growth: From 305,000,000 cu.ft. in 1924 to 600,000,000 cu.ft. in 1925, and 1,020,000,000 cu.ft. in 1926, for the direct heating of homes—an increase of 70 per cent in 1926."

"Sales to customers using 50,000 cu.ft. of gas a month or more increased more than 17 per cent in 1926 over 1925. This class of business amounted to 25 per cent of total sales in 1926, as compared with only a little more than 17 per cent in 1921."

"Gas service in Chicago is rated by the engineering section of the Illinois Commerce Commission as the best in the State. In the biennial grading of the gas service of 196 Illinois municipalities, as announced by the Commission, the service in Chicago topped the list with a mark of 96.53 in a possible 100. This is the highest rate ever given, as yet, to the gas service of any community in the state."

"The increase in gas consumption has exceeded population increase every year and was in its highest in the year just past."

"The backbone, or main artery, of the inter-connected system is the company's four-foot gas main across the Western flank of Chicago. An eleven-mile extension is going in this summer. The completed giant main will be 34 miles long."

HOUSE HEATING

"Including gas-fired garage heaters, gas-steam radiators and auxiliary space-heating appliances, there are now more than 5000 domestic customers enjoying the advantages of gas-fired heating comfort. More than 1500 Chicago homes have gas-fired central heating plants, and the number will be increased by 1000 or more this year."

"More than 2,000,000 telephone conversations were carried on between the company and the public during 1926—7000 a day. More than 28,000,000 other personal contacts between employees and customers occurred last year."

Chicago—the meeting place for the Ninth Annual Convention of the A. G. A. Oct. 10 to 14—has much of interest for every gas man.

G. B. Cortelyou is Head of Utility Joint Committee

Geo. B. Cortelyou

GEORGE B. CORTELYOU, president of the Consolidated Gas Company of New York, has been elected chairman of the Joint Committee of National Utility Associations, representing the gas, electric and street railway industries of the United States, according to announcement made recently. Philip H. Gadsden, vice-president of the United Gas Improvement Company of Philadelphia, was elected vice-chairman and chairman of the Executive Committee. Stephen Davis, formerly judge of the Supreme Court of New Mexico and solicitor of the Department of Commerce, has been appointed Counsel of the Committee.

Accompanying the announcement of the election of officers of the Committee was the following statement from Mr. Corteylou: "The Joint Committee of National Utility Associations was organized soon after the War ended. It succeeded the National Committee on Public Utility Conditions which was organized during the War to meet the new and complex problems thrust upon the utility industry by the War. That committee, composed of Messrs. P. H. Gadsden, chairman, E. K. Hall and H. H. Crowell, not only rendered very effective service to the public, but enabled the industry to cooperate with the government in all matters looking to the prosecution of the War.

"It was in recognition of the great value of coordinated effort in all matters affecting the industry as a whole that the Joint Committee was formed on the discharge of the National Committee at the close of the War. The Joint Committee is representative of the American Gas Association, the National Electric Light Association and the American Electric Railway Association."

Course on Home Service to be Held at Columbia

A THREE weeks' course for home service workers on gas and household gas appliances is to be given this summer at Teachers College, Columbia University, New York, N. Y., from July 11 to 29.

The course has been arranged as follows: Class work at Teachers College from 9:30 to 12:30, consisting of a one-hour lecture and demonstration on heat in its relation to gas, and a two-hour laboratory testing period. The afternoons will be spent at the various home service departments in and around New York. Talks on appliances will be given, and from 3:30 to 5:30 every afternoon the students will take their turns in giving home service demonstrations.

The number of home service directors taking the course has been limited to 26. The fee is $10. Application should be made to the Office of Practical Arts, Teachers College, Columbia University, N. Y.

First Industrial Gas Sales Conference Held

ONE of the most important developments in the promotion of sales of gas to industry is the determination of those actively engaged in this line to define and set up national selling policies. This was especially evident at the first industrial gas sales conference which was held at Boston, Mass., June 9 and 10.

This meeting, held by the Sales Methods Committee of the Industrial Gas Section, K. Emmerling, chairman, was for the purpose of establishing a sales plan incorporating the best policies in use today, and to bring about a better understanding of the problems involved in selling gas for industrial purposes. Thirty-five industrial executives attended.

The sales budget, sales organization, equipment, connection work, financing, etc., were all considered in their relative importance. A summary of 82 returns from a nationally circulated questionnaire was used as the basis of the discussion in the effort to determine best practice.

The need for surveys of the potential field was brought out forcibly when it was shown that only about half of the companies reporting had a definite idea of the available business in their respective territories. Those companies that have adopted the sales budget method of operating are enthusiastic over the results, and claim that the budget, or quota, principle is a stimulus to the salesmen and is of further value in being a measure of potential sales.

The questionnaire showed the sales engineer type of salesman was favored, 64 companies reporting showing a classification as follows: 92 salesmen, 41 engineers, 158 sales engineers, 90 service men and service engineers.

Of 75 companies reporting, 69 sell industrial equipment, and 47 expect to make a profit on the sale. Sixty-five companies use the installment plan of selling, or a modification of it.

The Committee plans to review all methods in use today, to outline a national policy.

Welded Line Carries Gas Through Canal

Unusual Methods Employed By Gas Company in Laying Mains at Cohoes, N. Y.

By W. S. DILLON
Gas Superintendent, Cohoes Power and Light Corporation

LAST fall it became necessary to run an additional gas main from the plant of the Cohoes Power and Light Corporation on the Mohawk River to the other side of Cohoes, passing through the main business section of the city. There were a number of newly repaved streets in the area to be crossed and the prospects were for at least the usual amount of excavation expense if regular trenching methods were followed. It so happened that we were in position to consider use of the numerous water power canals, ducts and tunnels which formerly supplied power to industrial plants in this city. These waterways paralleled our proposed route, through the most congested part of the city. They are always full of water, however, except on an occasional Sunday when the level is drawn down to permit repairing, etc.

Fig. 1

Figs. 2 and 3

Since there were nine thousand feet of pipe to be laid, and a limited time before cold weather would begin to hinder operations, it became necessary to devise some means of laying the pipe with water in the canals. The previous year 7800 ft. of oxy-acetylene welded line had been laid with complete success by our company. The logical way to overcome the time limitations and other construction difficulties, it seemed to us, was to weld the new line also, and this course was decided upon.

To reach the first canal from the starting point at the gas plant, 20-ft. lengths of eight-inch wrought steel pipe were joined together into 200-ft. sections and then rolled into the trench. Figure 2 shows one of these sections and the blocks used to allow the pipe to be turned during welding.

Fig. 4

Fig. 5

Continuing on for a short distance, we soon reached the Champlain Canal—still a navigable waterway—under which we had to carry our line in making the first crossing. Here we used a steam shovel to dig out a small bayou in the edge of the bank (near where men are standing, in Fig. 4). Next we welded together a 300-ft. section, picked this up in the middle with the steam shovel, swung the entire section around and out over the stream, and then hauled the end straight across with a cable to the opposite shore. The after end of the pipe then lay under water, just within the bayou. By drawing down the water level the following Sunday, we were able to build a wall across the mouth of the bayou, on the water side of the pipe end. We then extended our original trench and laid pipe up to the back of the wall, where we joined on the end of the pipe which projected through the wall at this point (Fig. 5).

From this point the route involved some further trenching until a canal paralleling our right-of-way was reached. With the aid of a row boat, a cable was carried up the canal and made fast to a windlass on the next bridge. A heavy ring was then ox-welded into the forward end of a 200-ft. section. This section was pulled forward into the canal for a distance equal to its own length.

Another 200-ft. section was welded to the after end of the first, and the 400-ft. section then pulled forward into the canal. By repeating this process we handled as much as 1500 ft. of pipe on a single haul. Figure 6 shows part of the line which was laid in this way. While most of this work had to be done on week days with water in the canals, the pictures shown here were taken at times when the level had been drawn down.

Figure 7 shows the line leaving one canal to enter another. Figure 8 shows pipe being pulled through a water tunnel which leads into a canal at a higher elevation. Figure 10 shows the line emerging from a 420-ft. tunnel through which it was pulled with a pair of windlasses in spite of corners, projections and changes of level. This indicates the type of "forced fits" that were frequently

Fig. 6

Fig. 7

Fig. 8, center top; Fig. 9, below

Fig. 10, below; Fig. 11, center bottom

necessary. The line conformed satisfactorily to the contours of the tunnel, just as it did with other passages through which it was drawn. If this seems like rough handling, it might be worth noting that on the steel pipe line built with oxy-acetylene in 1925, we used trucks and street cars to drag the longest welded sections into position.

On the line here described, work was started September 1, and the gas turned on November 15. The line developed no leaks under test with 100-lb. air pressure and has operated perfectly, without leaks and with no maintenance during the months it has been in use. Temperature variation has been quite severe. The first month the line was in service, the thermometer dropped to zero, but with no adverse effect upon the line.

In the past, questions have been raised as to the practicability of welded lines. Our experience, however, has satisfied us that on the lines we have built, welding has provided definitely sound and leak-proof joints, even when installed under adverse conditions. Welding has also enabled us to use construction methods practically impossible with other types of joints, and at a lower cost.

The credit for these results is due in a large measure, we believe, to the fact that at the very start we took stock of the things we did not know about welded construction, and then turned for advice to the engineering staff of a manufacturer company whose business it is to know oxy-acetylene welding and its application to industrial problems. Service operators of this company helped us select the best welders from the local men available, aided in further instructing these men in the most important phases of pipe-line work, helped organize them into efficient welding crews, cooperated in maintaining the standard of work on the basis which characterized the completed jobs. With similar cooperation at hand, and with a full appreciation of the fact that by oxy-acetylene welding, properly applied, sound and permanently tight joints can be made under field conditions, any distribution engineer should find little difficulty in obtaining thoroughly satisfactory results.

Nominations for A.G.A. Officers

TO the Members of the American Gas Association: The following report of the General Nominating Committee, covering nominations for officers of the American Gas Association for the term of one year and for Directors for the term of two years, which will be presented at the Annual Convention in Chicago in October, 1927, is hereby announced to the membership by the Managing Director in accordance with Section 2 of Article II of the By-Laws:

O. H. Fogg

B. J. Mullaney

For President—Oscar H. Fogg, Consolidated Gas Co. of New York, N. Y.

For Vice-President—B. J. Mullaney, The Peoples Gas Light & Coke Co., Chicago, Ill.

For Treasurer—Clifford E. Paige, Brooklyn Union Gas Co., Brooklyn, N. Y.

For Directors—

H. C. Abell,
Electric Bond & Share Co.,
New York, N. Y.

Chas. M. Cohn,
Consolidated Gas Electric Light & Power Co.,
Baltimore, Md.

J. S. DeHart, Jr.,
Isbell Porter Co.,
Newark, N. J.

F. C. Freeman,
Providence Gas Co.,
Providence, R. I.

R. W. Gallagher,
East Ohio Gas Co.,
Cleveland, Ohio

Arthur Hewitt,
Consumers Gas Co. of Toronto,
Toronto, Ont., Canada

T. N. McCarter,
Public Service Electric & Gas Co.,
Newark, N. J.

Francis H. Payne,
Metric Metal Works,
Erie, Pa.

H. S. Schutt,
C. H. Geist Co.,
Philadelphia, Pa.

Respectfully submitted,
H. A. Norton, *Chairman*,

W. A. Dunkley, Burton Smart,
Geo. B. Evans, F. J. Schafer,
P. S. Young.

The following have been nominated to serve as Section officers for the year 1926-1927:

Accounting Section: Chairman—Edward Porter, The United Gas Improvement Co., Philadelphia, Pa.; Vice-Chairman—F. H. Patterson, Rochester Gas & Electric Corp., Rochester, N. Y.

Industrial Gas Section: Chairman—F. C. Mackey, Public Service Co. of Northern Illinois, Chicago, Ill.; Vice-Chairman—J. P. Leinroth, Public Service Electric & Gas Co., Newark, N. J.

Publicity and Advertising Section: Chairman—E. Frank Gardiner, Midland Utilities Co., Chicago, Ill.; Vice-Chairman—James M. Bennett, The United Gas Improvement Co., Philadelphia, Pa.

Manufacturers Section: Chairman—H. Leigh Whitelaw, American Gas Products Corp., New York, N. Y.; Vice-Chairman—John A. Fry, Detroit-Michigan Stove Co., Detroit, Mich.

Technical Section: Chairman—Walter C. Beckjord, American Light & Traction Co., New York, N. Y.; Vice-Chairman—H. E. Bates, The Peoples Gas Light & Coke Co., Chicago, Ill.

The Stevens Hotel offers an exceptional opportunity to gas men to inspect the gas-fired hotel kitchen equipment installed there

Industrial Inspection Trips to Be Arranged for Those Attending Convention

A FEATURE of the Ninth Annual Convention of the American Gas Association of particular interest to industrial gas men will be the inspection trips to Chicago manufacturing plants. These are being arranged to permit industrial gas engineers from all over the country to view the gas installations made by The Peoples Gas Light and Coke Company.

The gas installations in Chicago are so many and so diversified that a complete "bill of fare" will be offered those who attend the convention at the Hotel Stevens, Chicago, October 10 to 14. Among the many operations which it will be possible for the engineers to inspect are the following: Baking, cooking, annealing, brass melting, bread baking, bright annealing, can making, carbonizing, coffee roasting, core baking, die casting, forging, bolt making, galvanizing, hardening, ice cream cone baking, japanning, mould drying, rivet heating, sausage smoking, soft metal melting, tempering, etc.

The intensive promotion of industrial gas sales in Chicago is known to every one in the industry, and the inspection trips will doubtless prove of great value to the members of the Industrial Gas Section and all others interested in this large field for gas sales, by giving the opportunity of checking up developments in Chicago.

It is particularly interesting to note Samuel Insull's remarks on the industrial gas business in Chicago. In the year book of The Peoples Gas Light and Coke Company, he says:

"The most interesting thing in our business is the increasing sale of gas for industrial heating purposes. . . . Our sales to customers using 50,000 cu.ft. of gas a month or more increased more than 17 per cent in 1926 over 1925. This class of business amounted to 25 per cent of our total sales in 1926, as compared with only a little over 17 per cent in 1921."

CHICAGO'S INDUSTRIES USE GAS

Industrial Chicago burned 736,880,000 cu.ft. more gas in 1926 than in 1925—an increase of 19.7 per cent. The total for strictly manufacturing purposes was 4,476,935,000 cu.ft. More gas was sold for industrial purposes in November, 1926, than in any previous month of any year—405,730,000 cu.ft.

Furnaces other than coal- or coke-fired

were replaced in one plant by gas equipment consuming 4,500,000 cu.ft. monthly. A manufacturing concern which formerly owned and operated its own gas plant burned 76,240,000 cu.ft. of "Peoples" gas in 1926—enough for a city of 10,000 population.

The agricultural implement industry took 125,000,000 cu.ft. of gas in 1924 and 195,000,000 cu.ft. in 1925. In 1926 it used 415,000,000 cu.ft.—an increase of 30 per cent over the combined consumption of the two previous years. It still offers opportunity for a further increase of 300 per cent.

One large company which manufactures steel implements is now using an average of 1,000,000 cu.ft. per day. It took 46,422,000 cu.ft. in one month of 1926, establishing a record in this company for one month's consumption. That company was using only a few million cu.ft. monthly, a year or two ago. The increase in its consumption is due to constantly wider use of gas fuel in its many heat-treating processes.

The new Stevens Hotel, the convention hotel, alone uses 40,000,000 cu.ft. annually in its kitchens and bakeries.

Those interested in making inspection tours of Chicago's industrial plants are urged to communicate with D. W. Chapman, manager, industrial gas sales, The Peoples Gas Light and Coke Company. Every effort will be made to arrange for inspections of those plants which members want to see, and a form has been prepared by Mr. Chapman, with allowances for preferences, etc.

New Gas Meter Pipe Defeats Fraud

Invented by Henry Klippel, of the Brooklyn Borough Gas Company, Coney Island, N. Y.

HENRY KLIPPEL, gas appliance expert, Brooklyn Borough Gas Company, Coney Island, N. Y., has patented a guard to prevent unlawful interference with the gas meter's proper registration.

This device is to be attached to the discharge opening of the meter and to be used in place of the ordinary discharge pipe.

The sketch shows a view in section and elevation of a portion of a conventional form of gas meter showing the modified connection, which is described in the patent as:

"A pipe open on one side and embodying a reduced upper portion and an enlarged lower portion, there being a screw threaded neck at the upper open end, appropriate attaching means, and an internal guard and baffle plate mounted therein in the enlarged portion, for cooperation with the open side and with the discharge passage of the gas meter, said plate comprising a downwardly and inwardly inclined upper portion and a vertically disposed lower portion terminating in spaced relation from the bottom of said pipe."

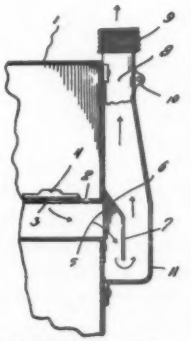


Diagram of Mr. Klippel's gas meter pipe that prevents fraud

It will not interfere with the proper flow of gas, it is said.

Mr. Klippel went with the Brooklyn Borough Gas Company in 1907 as a gas fitter, later taking care of the shop. He now is gas appliance expert.

Increasing the Revenue from Apartments

The Denver, Colorado, Company Finds that Master-Meter Installations Are a Load Building Factor

By ROY G. MUNROE
Gas New Business Manager, Public Service Company of Colorado

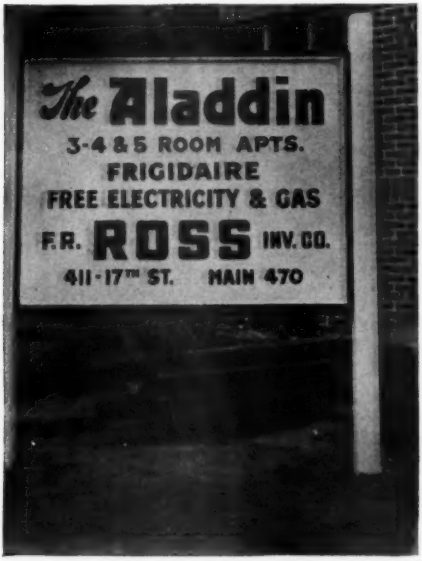
THE gas sales representatives of the Public Service Company of Colorado are compensated on a schedule which takes into consideration the increased gross revenue produced on each representative's territory. Apartment house consumers have always constituted a class whose usage of gas and electricity has been extremely difficult to influence.

Some months ago Ottomar O'Donnell, architects' and builders' service engineer of the Gas New Business Department, undertook to solve this problem through the promoting of the master-meter idea among the architects and the apartment house owners of the city. That this plan will materially increase both consumption and revenue per apartment is indicated by the statistics gathered thus far by Mr. O'Donnell.

Apartment house tenants not only use gas and electricity less liberally than do their neighbors in detached dwellings, but their tendency is that of most other Americans—towards less and less family cooking, home baking, home laundry work, and home living. The restaurant and delicatessen store, the door-to-door bread man and the progressive laundry proprietor are all taking business away from the public utilities almost as fast as we can create additional load by aggressive new business promotion.

Many American cities are at this time somewhat "overbuilt." Wherever this condition prevails, apartment house proprietors are contending with numerous vacancies, and the time is ripe to introduce the master-meter idea. The proprietor who has vacant apartments on his hands soon begins to plan some painful rent reductions. He will welcome any helpful suggestions. A few statistics from our consumers' ledgers are usually sufficient to convince him that the average apartment house tenant uses such small quantities of gas and electricity per month that "free gas and electricity" will

The author mentions the effect of the master meter installation in this house, the Gross Apartments in Denver, Colo.



The owner assumes all charges for gas and electricity

cost the proprietor but a small sum per month per apartment.

On the other hand, the psychological reactions of prospective tenants are such that they place a value upon "free gas and electricity" out of proportion to the actual cost of such service. For instance, in one large Denver apartment house the proprietor was planning an initial rent reduction of $5 per month in a vain endeavor to fill 15 vacancies. His tenants were paying individual gas and electric bills, averaging a total of about $2 per month per apartment. He was induced to advertise "free gas and electricity," installed a master meter and filled his vacancies quicker than he could have hoped to fill them with a $10 per month rent reduction.

This free service is costing him only $3 per month per apartment, in spite of the fact that his tenants have taken advantage of his liberality to more than double their former average consumption of gas and electricity. This is because he now purchases both gas and electricity through master meters and pays for the service upon the Doherty three-part rate known as the wholesale schedule.

One of the difficulties to be overcome in presenting the master-meter idea is that of correcting in the mind of the proprietor the same exaggerated idea of the cost of free gas and electric service which, when existing in the minds of the tenants, can be made to work so effectively in the landlord's favor. His first reaction is identical with that of the tenants—that such free service will be so wastefully used as to make the cost excessive.

We have found it necessary to show such proprietors not only statistics on their own buildings, but also those from other similar apartment buildings in the city. Once the apartment man can be made to realize what huge and wholly improbable increases in consumption per apartment can be included in an over-all cost entirely satisfactory to him per apartment, he himself begins to plan ways and means to capitalize on the new idea.

Statistics collected during the past year's experience indicate that apartment house tenants will increase their former

Gross Apartments
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Clean, airy, sunny, modern apartments, 1 and 2 rooms, kitchenettes and bath. Priced most reasonably for high class property in desirable location. Walking distance. One room, kitchenette and bath, $32.50, $35 and $40; 2-room, kitchenette and bath, $42.50, $45 and $50. Excellent janitor service and plenty of heat.
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Newspaper advertising explains the new service rendered by the landlord

	GAS		ELECTRICITY	
	Cu.Ft. per Apt.	*Rev. per Apt.*	*Kw.hr. per Apt.*	*Rev. per Apt.*
January	1360	$1.19	46	$2.19
February	1540	1.20	45.5	2.21
March	1610	.90	46	2.22
April	1360	.81	42	2.12
May	1310	.80	40	2.13
Average	1436	.98	43.9	2.17

normal use of gas and electricity from 50 per cent to 100 per cent when changed over to "free service." Unfortunately a tendency to revert to lower consumptions as the novelty wears off is already apparent. However, even under the master meter or three-part rate a substantial increase in gas and electric revenue per apartment house meter is shown. The reduction in the rate per unit is more than offset by the increased consumption per apartment.

Our records show that the tenants of the Gross Apartments were consuming an average of 1020 cu.ft. of gas per apartment per month under the former plan of individual meters. For this gas they paid an average revenue of 97 cents. Their electric consumption averaged 15.5 kw.hr. per customer per month, for which they paid an average of $1.04. Since the installation of master gas and electric meters, the consumptions and revenues have been as shown above.

Another instance of increased revenue per tenant is that of the Pencol Apartments where the results were as follows:

	41 each Gas & Elec. meters	*1 Gas & Elec. meter*	*Incr. Gas & Elec. Cons. & Rev*
Domestic Gas Cons. per Apt.	800 cu.ft.	1560 cu.ft.	760 cu.ft.
Water Htg. Gas Cons. per Apt.	00 " "	4300 " "	4300 " "
Domestic Gas Rev. per Apt.	$.76	$1.43	$ .67
Water Htg. Gas Rev. per Apt.	.00	$1.32	$1.32
Electric Cons. per Apt.	26 kw.hr.	45 kw.hr.	19 kw.hr.
Electric Rev. per Apt.	$2.08	$2.08	$ .00

The outstanding conclusion to be drawn from the domestic gas figure in the Pencol Apartments is that the average tenant has consistently used twice as much free gas as experience shows the average tenant uses when paying for it himself. The ratio of two-to-one is great enough to be of considerable importance. There must be an underlying cause. We must continue to assume that no appreciable amount is wasted and if we do, we are forced to realize that use is made of this much gas. Why are other apartment tenants so niggardly in their gas purchases? It may be either of the following two reasons, or a combination of them. Does fear of a "high" expenditure beget parsimony? Is ignorance of the benefits and comforts supplied by gas so great that proper use of it is made only when it is furnished without cost? The answer should be worth a great deal to the gas industry.

The assumption regarding wasted gas cannot be extended to electric consumption under a single electric meter.

In addition to the information which this building has supplied in connection with strictly domestic gas consumption, it, and the master meter, have opened up a field of water heating which promises to have great possibilities. Large space heating cannot, as yet, be met by most gas companies. Small space heating in individual residences can be accomplished with profit, however. If the water heating facilities of a building are properly designed, we can heat water for large buildings during the summer with the plant capacity which supplies small space heating loads in the winter, letting the

coal-fired boiler of the large building also produce hot water in the winter time. There is a perfect interlocking relation between the two loads.

Beginning in July, 1925, the entire water heating load of the building was undertaken. In addition to supplying hot water to 41 apartments, the plant also supplies water to all stores on the Colfax Avenue side. One of these is a drug store, with large fountain facilities and another is a restaurant serving about a hundred meals a day.

During the summer months the water is heated by gas. Whenever the weather is such that fire is necessary in the space heating boiler, gas is supplemented by what is known as an Excelso heater which effects a transfer of heat from coal boiler to water in the reservoir. In this particular case the heater is considerably undersized and accomplishes very little.

It is well to call attention to the manner in which gas can be bought for water heating in this building, if the three-part rate is in force. It must be supposed that the owner is willing to furnish heat for cooking. The demand charge and the more expensive gas of the sliding scale is a necessity to meet this requirement which the owner wishes filled, and we have left for water heating a lower commodity price and no demand charge, it being assumed, of course, that the water heating demand is less than the working cooking demand.

Consideration of these two demands makes it of extreme importance to know whether the relation of the heater size and reservoir size is proper for the job. In some cases the reservoir is too small, and an extra large heater would have to be used, which would result in having to purchase extra demand for the water heater.

The daily hot-water load at the Pencol building is very close to 2500 gallons. We maintain an outlet temperature of about 160 degrees. The reservoir has a capacity of 960 gallons and we are able to work the heater, by controlling the height of burner flame, at such a speed that it is in continuous operation close to twenty hours.

The ideal situation is very simply described. Let the owner purchase a certain size stream of gas; when the tenants want it for cooking, the whole stream, or any part of it, is available for that use. Their requirements are paramount. When not needed for small uses by some one of the many individuals who compose the community which we are serving, the stream of gas must be put to work heating water, which can be economically stored.

DEMAND DISTRIBUTOR

The gas utilization department of the Public Service Company of Colorado is now working on a demand distributor which will accomplish this result. It is our sincere hope that satisfactory operation will be reported in the very near future, and when perfection is obtained we will have some gas in use in the Pencol Apartment twenty-four hours a day. During peak cooking hours, around six in the evening on week days, and around noon on Sundays and holidays, the gas used will be for cooking purposes; the rest of the time, with perhaps a slight safety factor for emergencies, gas will be burning constantly in the water heater.

Demand in the Pencol for water heating is in the neighborhood of 350 cu.ft. per hour, or roughly, a third of the demand necessary for cooking purposes.

In another part of the city there is a newly constructed 48 apartment building furnishing gas to its tenants at about 60 cents per apartment per month. It is fair to make the supposition that, if gas were not gratis to the tenants in this building, they would probably use no gas at all.

Ground has just been broken for a 72 apartment building in which gas and electricity will be furnished by the owners. The owners in this case are saving several thousand dollars in space for meters and in a simplified pipe layout.

(Continued on page 438)

Laying flat gas main over subway tube in Cincinnati

Subway Construction Presents Problems

Flat Boxes Used as Gas Pipes to Solve Unique Distribution Problem in Cincinnati

By E. A. MUNYAN
Asst. Gen'l Mgr., Gas Department, The Union Gas & Electric Company

THE City of Cincinnati is now listed as one of those having subways or subways under construction. Sometime ago, subway construction was authorized and a rapid transit commission appointed. Construction has started on a subway to the north and northeast sections of Cincinnati and this entailed considerable work and reconstruction of gas lines by The Union Gas & Electric Company.

Several difficult problems have been encountered. The worst problem was that of supplying the district north and east of the Central Parkway Boulevard which is a parkway built directly above the subway. The diagram shows the territory involved. It will be noticed that there are very few connections from the north and east sides to the south and west sides of the Parkway. It was necessary to build a line in some way over the subway roof to connect up the north portion with the central part of the city, located on the south side of the Central Parkway, the 90 degree bend in the parkway at Central Parkway and Plum Street being the most logical and effective, from a gas engineering standpoint. Permission to do this was long withheld and was finally given to the company.

© Herbert Photos

Connections made to bottom side of the boxes to 16-inch main

Originally, there was a 6-inch high pressure regulator feeding a 10-inch main running on the south side of Central Parkway east from Plum St. This was not tied in with the north side of the Boulevard and it was

Map of territory involved

our object to make a connection between the 20-inch on the north side and the 10-inch on the south side. The problem was solved by increasing the size of the regulator from a 6-inch to a 16-inch, replacing the 10-inch pipe with 16-inch pipe to and across the parkway to the subway roof and then constructing 2 flat, box-shaped tubes over the subway roof to the north side. We then dropped down to the 20-inch main with another 16-inch pipe. One of the illustrations shows the connections made to the bottom side of the boxes with our 16-inch main.

The boxes were 3 inches thick by 38 inches wide, inside dimensions, and were 48 feet long. Each box had a 3-inch I beam running down the center to give additional support, the I beam being welded on the inside of the box.

The capacity of the 2 boxes was very nearly equivalent to an 18-inch O D pipe which would give us more than ample capacity for the 16-inch connections leading to and from the boxes. The box was 5½ inches high over all and the top was 13 inches from the top of the finished pavement. It can be seen very readily that we could not have made the box much higher to get over the subway.

The other illustration shows the construction of the edge of the subway and the connections made. It shows the boxes complete just after testing. When we had the box all completed and tested to four times the normal working pressure, we gave it two coats of red lead and then grouted around and under the boxes. We also put a concrete pier at each end of the boxes, leaving an opening for the pipe and couplings, further to support the ends of the boxes. We then made a concrete bed 1 inch all over the top of the boxes and 1 foot around the boxes, so as to give further strength to the construction and to prevent vibration. When the contractor came along to pave the street, he further co-operated with us by putting in extra re-inforced concrete construction over the area we had already concreted, making a very substantial and well-constructed piece of work.

The "Song of the Flame"

"IF I can make my country's songs, I do not care who makes its laws,"—so spake an old-time philosopher.

National songs are inseparable from a country's history; they are the emanation and very essence of its national life.

In a story, recently dramatized, the "Song of the Flame" worked a revolution in Russia. The orgy of the Romanoffs was ended, and the people free, at last, to find their own political and social levels.

Most of us serve a sort of slavery to something. The old House Heating Furnace, for instance. What can be more inexorable than its demands for attention, and the clearing away of its cinders, dirt and dust.

Science is rapidly relieving us of such domestic slavery. The "Song of the Flame" in a central fired gas heating plant, sings of entire emancipation from the tyranny of the house furnace. Automatic in action, thermostatically controlled, it keeps every room in the house, from fall to spring, day and night, at a predetermined temperature.

Why deny yourself this freedom? If you live in Chicago write at once and we will tell you what it would cost to heat your home with gas.

House Heating Division

THE PEOPLES GAS LIGHT AND COKE COMPANY

Theatre program advertising designed to attract the theatre-goer

Gas—The Fuel of the Future

An Expression of Opinion from a Leading Chemical and Industrial Engineer

By ARTHUR D. LITTLE
Arthur D. Little, Inc., Cambridge, Mass.

IT has been said recently: "The real competition in which the gas industry is involved is that between research and tradition. The gas industry has followed tradition rather closely. Its competing industries have turned toward research and are willing to scrap all tradition."

The majority of our smaller gas companies are far from realizing, either in their present practice or in their preparation for the future, the great possibilities of the industry. Their management is on a par with that of the short railroad, the isolated electric or telephone plant, before consolidations took place and organizations were formed which were large enough to finance extensive research.

In 1925, 442 billion cu.ft. of manufactured gas were sold in the United States, an increase of 375 per cent over the sales of twenty years ago. The gas industry is now facing a fivefold increase in the next decade or two. There will be larger distribution systems, comparable with those already in operation in the distribution of high-tension electric current. Such systems will involve two new developments—large central gas plants and long-distance, high-pressure gas transmission.

CENTRAL GAS PLANTS

Just as the enormous hydro-electric plants must be located where there is a large available fall of water, so the large gas-generating plants will naturally be located in the mining districts, where a large supply of coal is available. The Giant Power scheme fostered by the Governor of Pennsylvania, which advocated the erection of huge steam-electric plants at the mine mouth, has been shown to be impracticable because of lack of condensing water for the steam turbines. No such large supply of water is needed for giant gas-generating plants.

The ordinary process of illuminating gas manufacture results in a large production of coke. It has been objected by some that gas generation in large plants at the mine mouth would produce an enormous amount of coke, which would be marketed with difficulty from such an isolated locality. But it is possible to turn this coke entirely into additional gas, which, when mixed with the first gas, will give a mixture of satisfactory heat value.

Processes of complete gasification have been devised, and are in operation in Europe on a small scale. There is little doubt that by the application of research methods, they could be modified so as to be adaptable to large-scale operation.

LONG-DISTANCE GAS TRANSMISSION

Long-distance transmission in pipe lines has long been applied successfully to natural gas, as well as to petroleum and water. Two gas pipe lines from West Virginia to Ohio are 300 miles long, of 20-inch reducing to 16-inch welded steel pipe. The newest natural gas line, now awaiting completion of contracts, is to extend from the Texas Panhandle to Kansas City, Missouri. This line will be 450 miles in length, of 20-inch welded steel pipe, and will transmit the gas at a maximum pressure of 450 pounds per sq.in. Seven gas pumping stations, using gas engines for power, will be located along this line. The daily throughput will be 100 million cu.ft. Experiments have shown the leakage losses to be very small, and the whole project to be feasible.

There are already a few pipe lines carrying manufactured gas to some distance in the United States. We are informed that coke-oven gas is now being sent from South Bethlehem to the Philadelphia district. A project at New Haven includes the transmission of coke-oven gas from that point to Bridgeport, 17 miles, and Hartford, 36 miles.

The most extensive proposition for the transmission of manufactured gas is that recently announced by the Coal Utilization Company of Essen, Germany. Throughout the great iron and coal district of the Ruhr there are enormous coke-oven systems, which manufacture the coke for the blast furnaces of the district. There results an enormous production of coke-oven gas, having a high heating value (500-600 B.t.u.), which can be only partly utilized in the district. Some is so used, being transmitted over a maximum distance of 62.5 miles.

It is now proposed to build a transmission system to distribute this gas at high pressures in welded steel pipes to every large German city. The maximum distance would be 450 miles, and the maximum pressure, 450 pounds per sq.in. This system would link up with the local gas companies, to whom the gas would be sold, just as high-tension electric lines sell current to local electric companies. The gas from the entire Ruhr district would be collected at one point, there to be purified and compressed for the distribution system. It is interesting to note that the total gas to be transmitted per annum is about 1.5 times the total amount of gas manufactured in New York City today.

Such a central collection point would at once become the center of research for the whole gas industry, where methods of gas utilization could be tested and developed. From such wide distribution there would doubtless develop wider domestic use of gas, the per capita consumption of which is comparatively small in Germany. As the use of gas became more common, the smoke problem would disappear. Giant handling machinery at the mines would replace household and industrial stoking.

Research has shown that motor fuels from coal may be developed which will take the place of gasoline when our petroleum disappears. It is interesting to note that the plans of the Coal Utilization Company are broad enough to include all questions such as this. They say:

"Contrary to press statements that the company is not concerned with the chemistry of coal, I must say here that the field is unlimited. It will use mechanical, electrical and chemical methods to arrive at its object. All processes which use water, air, and coal as raw materials belong to the activities of this company. Coal which is unsaleable must be changed to other forms of energy or to other materials for which there is a market."

Jubilee Issue

THE *Journal Des Usines a Gaz*, which is the official organ of l'Association Technique de l'Industrie du Gas en France, reached its jubilee with its issue of May 5. The issue contained a number of special articles reviewing the progress of the gas industry in France during the past 50 years.

Cohoes, N. Y., Adopts New Ordinance on Gas Tubing

ON April 5, 1927, the City Council of Cohoes adopted the following ordinance "relative to the sale and use of tubular connections for illuminating gas fixtures and appliances":

Section I. No person, firm or corporation shall use, sell, expose or offer for sale any tubular connection or fabric intended for use on any gas stove, heater, lamp or other gas appliance or fixture unless such tubular connection shall have been approved in writing by the Department of Health of the City of Cohoes.

Section II. All persons, firms or corporations violating the provisions of this ordinance shall, upon conviction thereof, be guilty of a misdemeanor and shall be punishable by a fine not exceeding fifty dollars ($50) or imprisonment not exceeding ten days, or by both such fine and imprisonment.

Section III. This ordinance shall take effect immediately.

Editorial

Our Program

RECENTLY there was sent to every member of the Association a pamphlet entitled "The Program of the American Gas Association," reviewing the progress on each item of our official Three-Five Year Program. Commercial, industrial, technical, and all other phases of the gas business are dealt with, although the pamphlet does not purport to relate the extensive work in progress on activities not specifically mentioned in that Program. In one column the recommendations of the Three-Five Year Program committee are given; in the other appears the report on progress to date. The report visualizes a year of rapid progress.

The "deadly parallel" method of presenting the material leaves nothing to the imagination, and comment is scarcely necessary. Important work has been allotted to the various sections and committees of the Association. Because this work influences the progress of the entire gas industry, it is significant that "finished" has been written after so many of the projects, and that due to the excellent cooperation and loyal activity of our sections and committees, exceptionally encouraging progress reports appear after the rest.

Careful reading of "The Program of the American Gas Association" is recommended.

The Joint Committee

REPRESENTATIVE of the American Gas Association, the National Electric Light Association, and the American Electric Railway Association, the Joint Committee of National Utility Associations, with a record of notable service in war times, has been reorganized to deal with problems now affecting the utility industry and the holders of its securities in the United States. With Hon. George B. Cortelyou as chairman, and Mr. Philip H. Gadsden as vice-chairman and chairman of the executive committee, utility men are assured that these questions will receive efficient and effective attention.

The public utilities and their security holders are to be congratulated in taking their stand in the open for a continuation of the principle of private enterprise, initiative, achievement and reward, upon which our nation has grown great, and in opposition to over-centralization of governmental power and authority over the lives of citizens.

It Is Your Industry

THAT almost hackneyed, nearly done-to-death word, cooperation, persists in carrying an important message to American industry. The word will probably never become trite; it will always convey a meaning of service. It is America's best substitute for the Golden Rule.

We shall not labor the value of cooperation; we shall briefly mention a conspicuous example that came to light recently.

Reproduced on page 421 of this issue is an advertisement placed in the architects' and builders' trade magazines of the country, over the name of the Consolidated Gas Company of New York. While national advertising by a local gas company is unique, our point is not immediately concerned with this. A letter was sent to 150 gas companies now selling refrigerators telling them of the advertisement and suggesting that they take advantage of it in some manner in order that they too might benefit from it.

We need more of this cooperation. In the field of advertising alone a great deal might be accomplished if every gas company should ask itself, when embarking on a new activity, "How can I carry this out in a way to benefit other companies as well as my own?"

There should be more exchange of ideas and policies between the gas companies. The A. G. A. is ready and desires to become the clearing house, that the entire industry may benefit.

George Williams Dies Suddenly

Was Connected with Doherty Organization Since 1903 in Various Capacities

GEORGE WILLIAMS, long connected with Cities Service Company and one of the most beloved members of the Doherty organization, died at Portland, Maine, May 25, as a result of complications growing out of a serious case of influenza.

He had gone to his camp at Lake Kezar a few weeks ago in the hope of recovering his health, but lost strength steadily, and on Tuesday morning was removed to the Portland hospital where he was operated on in the hope of prolonging his life.

George Williams

Mr. Williams was born in Canada, March 23, 1873, and early in his business career went to Cleveland, from which city he enlisted in the Ohio National Guard for service in Cuba, where he took part in the battle of Santiago.

After his discharge from the army, he entered the public utility field, and in 1903 became associated with Henry L. Doherty, with whose enterprises he had been connected ever since.

He was recognized as one of the country's leading creators of new business for gas and electric plants, and followed this division of the public utility business until 1923, when he was appointed Stockholders' Agent of Cities Service Company, in which capacity he served until his death. In addition, he was a member of the board of directors of Cities Service Company.

Mr. Williams was a director in many public utility and industrial corporations and a member of numerous fraternal organizations. He was the leading spirit in organizing and maintaining interest in the Doherty Men's Fraternity, of which there are more than 9,000 members located at Cities Service properties throughout the country.

Funeral services for Mr. Williams were held at the Doherty Men's Club, 11 West 51st Street, New York City, on May 28.

Honorary pallbearers were: Henry L. Doherty, W. A. Jones, F. R. Coates, T. O. Kennedy, T. F. Kennedy, Fred LePorin, Paul R. Jones, W. P. Guinan, F. B. Irelan, B. C. Adams, V. B. Day, Charles A. Frueauff, C. N. Stannard, R. R. Choate, William Lehrer, Duncan Campbell, J. A. Munroe, L. F. Musil, M. F. Malone, R. A. Wotowitch, F. C. Hamilton, William H. Merritt and H. R. Straight.

Practice What You Preach Motto of Chicago Church

CLEANLINESS is next to Godliness" is brought home forcibly to the congregation of St. Gregory's Church in Chicago, Ill., every Sunday. The gas-fired furnace in the church eliminates all the dirt of storing and handling other fuels. Several Chicago churches have adopted this modern heating method primarily to eliminate dirt and minimize the necessity for redecorating the elaborate and beautiful interiors.

IT was erroneously stated in the May issue of the MONTHLY that the B-Line Boiler Company is located at Detroit, Mich. The company is located at Cleveland, Ohio.

R. B. Harper

A. H. Hall

R. M. Gallagher

R. M. Conner

© Blank & Stoller

J. S. DeHart, Jr.

© Blank & Stoller

N. T. Sellman

A Closeup View

of the

Powers Behind the Testing Laboratory

EVERY member of the American Gas Association is justly proud of the splendid progress that has been made by the Testing Laboratory at Cleveland, Ohio. In the two years of its existence it has set a record for achievement that has probably never been equalled in such brief period by a similar project in any other industry. The latest approval lists, containing more than 5000 gas ranges, 150 space heaters, and 15 types of tubing, testify to the businesslike work done at Cleveland.

The Managing Committee of the Laboratory is to a large extent responsible for the progress made. Commissioned by the Executive Board, the committee created the Laboratory, which for a long period of years had been an ideal of the industry, planned its development and charted the work to be done. The direction thus given has been constructive and sane, making it possible for the new undertaking to become almost immediately a leading influence in our industry.

The Laboratory Managing Committee directs every phase of the research and testing programs and allots all expenditures of money to cover the cost of every such activity. No research nor routine testing work of any kind is planned or undertaken without first securing the approval of the Managing Committee and then the sanction of the Executive Board of the Association.

There could be no more striking evidence of the keen and faithful interest shown than the fact that every member of the committee has attended every meeting, with a single exception when one of the members was abroad. A. G. A. members interested in Association work, and more especially the officers and directors, are well aware of the sacrifices involved, of personal and professional time.

R. W. Gallagher, chairman, is President of the East Ohio Gas Company, at Cleveland, Ohio, and through his generosity and active interest, his company has contributed materially to the Laboratory, with buildings, land, holders, equipment, and constructive efforts. Mr. Gallagher has recently served a year as President of the Natural Gas Association of America.

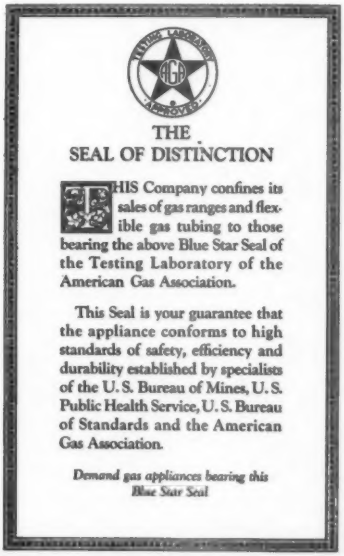
J. S. Dehart, Jr., of Newark, N. J., is well known to the industry. He has been a director of the A. G. A., is now a member of its finance committee, and has given a great deal of his time to the industry's problems. He is President of the Isbell-Porter Company, equipment manufacturers.

R. B. Harper, chief testing engineer of of The Peoples Gas Light and Coke Company, Chicago, Ill., has the honor of being chairman of one of the first committees appointed by the gas industry to consider the establishment of a laboratory, more than ten years ago. He is also one of the outstanding contributors to the technical accomplishment of our industry, and stands as one of its leading gas engineers.

A. H. Hall, vice-president of the Central Union Gas Company, New York, N. Y., is also chairman of the General Requirements Committee of the Laboratory, which supervises and considers for final approval the activities of all subcommittees preparing approval and installation requirements for all domestic appliances. The fact that these committees have been able to prepare in slightly more than one year's time complete requirements for four major types of appliances and tentative requirements for installation of all domestic appliances is ample proof of Mr. Hall's marked ability and leadership.

N. T. Sellman, utilization engineer of the Consolidated Gas Company of New York, N. Y., is a former assistant secretary-manager of the A. G. A. He is secretary of the Managing Committee of the Laboratory and is one of the signatories to all vouchers covering expenditures against the Laboratory fund. Mr. Sellman is in charge of the Laboratory of his own company, and his experience in testing matters of all kinds has been invaluable in solving the many difficult problems of management arising from time to time.

R. M. Conner has served capably as director of the Laboratory since its inception in June, 1925, and the splendid record made is testimony to his ability and efficiency. His former experience fitted him for the position particularly well. For more than ten years he was chief of the appliance testing laboratory of the Portland Gas & Coke Co., Portland, Ore. This laboratory devoted its activities exclusively to the testing and development of domestic and industrial appliances. Mr. Conner also was chairman of the Committee editing the Gas Appliance Testing Code of the Pacific Coast Gas Association, and he was research engineer representing the Pacific Coast Gas Association and had charge of the testing work in the Los Angeles investigation several years ago.


THE
SEAL OF DISTINCTION
THIS Company confines its sales of gas ranges and flexible gas tubing to those bearing the above Blue Star Seal of the Testing Laboratory of the American Gas Association.
This Seal is your guarantee that the appliance conforms to high standards of safety, efficiency and durability established by specialists of the U. S. Bureau of Mines, U. S. Public Health Service, U. S. Bureau of Standards and the American Gas Association.
Demand gas appliances bearing this Blue Star Seal

A window card that the customers like to see in the gas company's windows. The Laboratory seal is primarily for the benefit of the public

The Importance of the Local Market Survey

Why Marketing and Merchandising by Gas Companies Can Be Approached from a Scientific Viewpoint

By PROFESSOR GEORGE BURTON HOTCHKISS
Chairman, Department of Marketing, New York University

IT is generally agreed by business men that the most important and vexing problems of today are problems of distribution. This fact is conceded also by many authorities in engineering and technical fields. Not long ago, Dean Dexter S. Kimball of Cornell said (in effect), "The problems of production are so well on the way to solution that the solution is in sight. The big task of science is to secure more efficient marketing methods."

If you will look over the list of manufacturers who have attained conspicuous success in their respective fields, you will generally find that these are companies that have definite and consistent policies regarding distribution methods, the amount and kind of sales effort employed, and the specific marketing objectives at which they aim. In some instances these companies may have fixed upon their policies by chance or by the trial-and-error method, but more often they have based their decisions upon reasonably accurate knowledge of the facts regarding their markets.

Certainly this is the only sound method to employ today. Lacking an exact knowledge of marketing facts, the manufacturer may easily suffer from misdirection and waste of his selling effort. It has been found, for example, that some companies have spent as much to sell the final ten per cent of their volume as they spent to sell the other 90 per cent.

What is true of manufacturing concerns is true in some degree of public utilities such as the gas companies. These companies, however, have generally been somewhat backward in their application of scientific methods to marketing activities. There are various reasons for this, but possibly the following are among the most common.

In the first place, the executives of such companies have often been more interested in technical matters of production than in the work of selling. Some of them have even had a certain contempt for so-called "salesmanship"—a contempt which some salesmanship has perhaps deserved, since it has been not only unscientific, but often uneconomic.

Secondly, the gas company or other public utility has often rested secure in the complacent belief that it will get the available business anyhow since it usually has little competition in its particular field.

Thirdly, there has perhaps been the feeling that marketing cannot be approached scientifically since the elements which compose a market do not lend themselves readily to measurement.

These are not all the reasons, nor are they all operative in every instance, but they are probably among the most common. Yet paradoxical as it may seem, they only emphasize the importance of marketing investigation for the public utility and indicate greater probability of success in this effort than can be obtained by most manufacturers.

The technical viewpoint is an advantage rather than a disadvantage in marketing investigation. Far too many investigations have been conducted by people who wanted to prove something. Far too many have been unintentionally biased by the selling attitude. An investigation conducted by salesmen is practically worthless and sometimes worse than worthless. Hence a manufacturer who has his investigation carried on by

Presented at the Fourth Annual New York Regional Sales Conference, Lake Mohonk, N. Y.

his own sales organization is rarely able to get even an approximation of the truth. Any manufacturer who wants a real investigation of his market will do well to entrust the task to some outside organization. Far better results can be secured if the operatives who conduct the interviews or questionnaires and the people who furnish the information are alike unaware of the organization for whom the investigation is being made or the purpose for which it is to be used.

A gas company or other public utility, on the contrary, may be able to employ for investigation work a group of men who are not primarily salesmen and who will not be called upon to make use of the information after it is secured. Men of scientific temperament should conduct the work of investigation, otherwise biasing elements are likely to creep in, which, although small in individual units, result in a very large error in the total. More important still, those who plan and supervise the investigation should be technical men with the scientist's love of truth and the engineer's appreciation of accuracy. They will know how to distinguish between a fact and an opinion. The ideal investigation contains a maximum of fact and a minimum of opinion. Where it is necessary to accept human judgments, it is well to have them checked by the judgments of others, preferably of opposite temperament: Optimist vs. pessimist.

The lack of competition from other companies having precisely the same article or service to sell eliminates one important variable that most manufacturers have to consider. Of course a gas company or other public utility does have competition, not only from other forms of heat and light, but also from other articles and services which likewise clamor for a share in the family budget. Many of these articles, though of totally unlike character, are extremely serious competitors, because they are helped by other selling influences, such as style and the example and conversation of neighbors.

We have all seen how recent inventions like the phonograph, the automobile, the radio, have affected the sale not only of other luxuries like pianos, but also of necessities like clothing. It is quite possible that the sale of modern gas appliances would be greatly increased if they could be parked in front of the house like a new automobile or used in the living room instead of the kitchen!

These things, however, are for the most part outside the control of the gas company. All it can do is to discover how living conditions affect the sale of gas and measure the trend so as to estimate their future effects. This is admittedly a difficult task, because no one can forecast accurately the direction which style will take, or the limit which it may reach. Macy's reports that whereas a few years ago only two per cent of the women were wearing pajamas, 20 per cent wear them now. Macy's does not predict, however, what, if any, they will wear ten years from now.

HOW THE UTILITY DIFFERS

Nevertheless, the fact remains that the public utility can proceed with its marketing plans without making allowances for the plans of competing sellers in its own field. This the average manufacturer cannot do, because the sale of his toilet soap or automobile will not depend entirely upon its intrinsic merits or the amount of selling effort which he employs, but will also be affected by the merits and sales efforts of his immediate competitors. The gas company can safely estimate that industries, commercial establishments, and homes will consume at least a certain amount of heat and light, and that the source from which it is purchased will in the long run be chosen upon the logical basis of price and quality of service. If it can offer more for the money than its competitor, it need not fear the outcome.

The task then for the gas company is

to find out the potential demand for its service. When I speak of demand, I use the word in the economic sense, not in the loose way in which it is commonly used, as in the phrase "creating demand," which really means creating desire or intensifying desire. *Demand* cannot be created because it involves two elements —purchasing power and desire to purchase. Neither one of these is a constant quantity either with the individual family or with the community as a whole. Purchasing power, however, is more nearly constant than desire and is also less subject to increase or decrease by anything the seller may do. Hence the more important task in surveying a market is to discover purchasing power. Second to this is the task of discovering need. Unfortunately need is not synonymous with desire, but is perhaps the largest contributing factor by which it can be measured.

Certainly if we know accurately the amount of gas for which there is need, together with purchasing power, we have a fairly definite index of the quota at which the sales department or commercial department should aim. It will still be desirable to discover what obstacles stand in the way of obtaining this quota, so that sales efforts may be directed most intelligently toward the removal of these obstacles.

THE DOMESTIC MARKET PROBLEM

It is easy enough to discover and analyze the obstacles to the development of the industrial and commercial market for gas in any territory. These obstacles are financial and utilitarian; if they can be removed at all, it is by logical presentation of the reasons why gas would be a profitable investment.

The domestic market for gas, however, presents more difficulties, because it includes factors that are not logical and are not susceptible to exact measurement. A family may have the best of reasons for installing a gas water heater or other gas appliance and yet refrain from purchasing it because of emotional obstacles that cannot be easily overcome, and sometimes cannot even be discovered. Even when the desire for such an appliance may be present, it may be crowded out by desires for other things that the housewife considers of greater importance at the moment.

The domestic market for gas is not composed of so many horsepower to be produced, or so many meals to be cooked, or so many baths to be heated. It is composed largely of human minds, which are not to be measured by scales or micrometers. Some business men have thought the human mind is not to be measured at all, but the good old law of averages helps us here as it does in other kinds of statistical and research work, such as that conducted by actuaries of insurance companies.

We cannot say definitely that next year we shall be able to sell Mrs. Smith or Mrs. Jones additional gas facilities, but we ought to be able to predict with a fair degree of certainty the number of housewives in a certain residential section that we shall be able to convert next year, or in the next five years, or in the next ten years.

We can at least compare two equivalent towns or sections of the same territory and find what percentage of each territory now has a gas water heater or any other appliance. If A town has a 40 per cent saturation and B town only a 20 per cent saturation in water heaters, it is clear that the latter offers a productive field for sales effort on this appliance. There may, of course, be certain local obstacles which account for the difference, such as the difference in the rate for gas or in living habits of the people, but if so, these can readily be discovered and allowance made for them.

If each gas company made a survey of its territory and discovered the facts about its present saturation, we should soon be able to set up a normal degree of saturation to be taken as a standard, and comparisons could be made with it by

any territory as a whole or any section of a territory.

The starting point for any marketing survey is to find out the conditions that exist today. This, however, is not enough. It merely gives a cross section of a market. We need a series of such cross sections in order to establish a trend curve. The records of a company should be complete enough to indicate year by year not only the consumption of gas, but the elements responsible for increase and decrease. There are then two methods of estimating future requirements: One is by prolonging the curve making due allowance for the fact that in nearly all industries we have a period of normal curve of the flattened "s" type made up of four sections: 1. A period of slow growth. 2. A period of rapid growth. 3. A period of retarded growth. 4. A period of stabilization in which there is no growth other than that resulting from an increase in population.

I may say here that some scientific investigators in the field of marketing believe that this is not only the curve of an industry, but the curve of any marketing campaign or advertising campaign.

Such a trend curve presupposes a continuance of rates already in force (or at least no increase in rates) and a continuance of the sales effort which has been responsible for present growth.

THE SAMPLING ANALYSIS

A second method of estimating future requirements is by a sampling analysis of the industries and homes already served and an establishment of the factors which are common to the majority. This is to be followed by an analysis of the remaining market to discover where these same factors are present and where it is logical to expect further consumption. It is easiest, of course, to take account of these factors in making up a trend curve. There are advantages, however, in arriving at an estimate in two separate ways and then using one as a check against the other.

In making up a market survey to be used as a basis of estimating future requirements for gas, it is desirable to make a clear-cut separation between the industrial and commercial field and the domestic field. The latter field, in turn, might be divided into two sections, one covering the well-established uses of gas and the other covering the relatively new and debatable field of home heating, upon which the data may be too meager to warrant definite conclusions regarding the future.

EXAMINING A SURVEY

I have recently had the privilege of examining a market survey conducted by the Central Hudson Gas & Electric Corp., covering both electric current and gas. This survey in the main complies with the conditions necessary for a satisfactory estimate of future requirements and might well be taken as a model for other surveys of the same character.

In the industrial and commercial field, individual studies of each of the large consuming units were made by competent engineers to discover their present use of gas (and electricity) and also their potential increase in use. This potential increase did not take into account possible enlargements of plants, except such as were known to be definitely planned. The total of present use and potential use, therefore, does not represent a maximum that may be attained in the territory during the next ten years, since it is quite possible that new industries may come into the territory or there may be enlargements of present industries. It is, however, *a maximum of known possibilities.*

Even this figure was further discounted by eliminating certain prospects that were considered doubtful for financial or other reasons, and hence the total was pared down to the amount of present use plus the potential use of those considered good prospects. The figures then represent a quota which is consid-

(Continued on page 437)

Mixed Gas Research Work Progresses

Vital Findings on Important Subject Being Made By the Testing Laboratory of the A. G. A.

By G. B. SHAWN
Supervisor, A. G. A. Testing Laboratory, Cleveland, Ohio

G. B. Shawn

THE mixing of gases is a subject of the greatest importance to the gas industry. Increasing competition from other fuels, as well as a constantly growing demand on gas for industrial work, makes it necessary to take advantage of every available means of producing gas as cheaply as possible.

By the utilization of gases commonly regarded as by-products, companies selling manufactured gas are often able to distribute their products at reduced rates. Here the economic advantages of mixing various kinds of manufactured gases cannot be overestimated.

The changing sources of supply of raw materials often cause a change in the kind of gas to be supplied. Such changes never take place suddenly. Indeed, it is probable that in many cases, gas can be produced more economically by making only a partial change—that is, by mixing two or more kinds of gas. In some territories supplied with natural gas, the supply is rapidly becoming inadequate and the need of mixing it with some kind of manufactured gas becomes imperative.

The value of mixing gases established, the question now confronting the industry is, What factors shall govern the kinds of gases to be used in mixing? How far can the range of mixtures be varied without causing poor appliance operation? Recognizing the importance of this subject the committee on Engineering and Economic Survey turned the problem over to the Technical Section of the American Gas Association for solution. The Technical Section appointed a sub-committee, of which F. C. Weber of Henry L. Doherty and Co. is chairman. This committee selected the A. G. A. Testing Laboratory to carry on the research work necessary. It was felt that the various kinds of gas readily available at the Laboratory, together with the fact that much of the necessary equipment was assembled there, make the Testing Laboratory the most logical place for undertaking the work. This research is being financed by the natural and manufactured gas industries, the Laboratory agreeing to furnish testing equipment, personnel, and the necessary general supervision.

The general problem presented by the mixing of gases may be divided into two distinct parts: first, the problem of gas production and distribution. This phase of the problem is entirely economic and is controlled by relative costs of raw materials, the certainty of their supply, and the cost of transportation involved, as well as the condition of the market for such by-products as may be formed in the gas manufacturing process. These are the factors which must be considered by the engineers in charge of gas production.

At the other end of the gas main we find the other phase of the problem. The consumer is not directly concerned with gas production, but he is vitally interested in the quality of service rendered by the gas company. It is here that the supply of mixed gas presents the most difficulties. For, in addition to the unavoidable variations in conditions of sup-

Presented at the Production Conference, Detroit, Mich., May 31-June 1.

ply occurring when a single gas is served, we have the added variation caused by the mixing processes.

The American Gas Association has realized that the gas consumer should be assured that his appliance will operate safely and efficiently over the usual variations in gas service conditions. To this end it has established the Testing Laboratory where appliances are tested under requirements which cover all reasonable variations. The burden of producing the appliance with sufficient flexibility to meet these varying conditions has fallen, rightly, on the appliance manufacturer. After his appliance has been developed to attain this degree of flexibility, it is only right that the gas company should assume part of the burden of satisfactory service by maintaining variations in the gas supply conditions within reasonable limits. The foregoing remarks apply only to the domestic consumer. Industrial consumers will demand a constancy of conditions which will permit economy and excellent production. Since sales of gas to them are made on a purely competitive basis, these demands must be met.

In trying to estimate the effects of mixing gases for use in present appliances, we have three general factors to consider: first, the effect of specific gravity; second, the heating value of the gas; and third, the speed of combustion of the various gases. With most manufactured gases, the third factor is of relatively little importance, with domestic appliances, at least. We are concerned, then, with the effects of variations in the first two factors. Variations in specific gravity have two effects on appliance operation—changes in the rate at which gas is burned, and changes in the composition of the air-gas mixture passing through the burner. A drop in the specific gravity causes a larger gas rate, at the same time lowering the amount of air pre-mixed with the gas before burning. A rise in specific gravity produces the opposite effect in both cases. Thus we may expect lowering of specific gravity to overcrowd the burner, tending toward incomplete combustion, while an increase would eventually lead to flash back or blowing away of the flames.

Changing heating values has an effect somewhat similar to changing specific gravity, though not in the same degree. Assuming that the specific gravity remains unchanged, an increase in heating value would be equivalent to increasing the gas rate, and, although the actual cu.ft. of air injected into the burner would be practically constant, the higher heating value would cause a softer flame again tending to flood the appliance with gas. A reduction in heating value would have the opposite effect.

When we come to the mixing of natural and manufactured gases, the velocities of combustion will undoubtedly have a pronounced effect. Natural gas is composed almost entirely of slow burning hydrocarbons which are more difficult to burn in the usual appliance. Hence, it may develop that the mixture of a small amount of manufactured gas will improve combustion conditions.

The approval tests made by the Laboratory were designed to take care of variations in pressure when the appliance is adjusted with a certain kind of gas. In the tests made with mixed gas it will be necessary to determine the relationship of permissable variations in pressure to variations in specific gravity and heating value. In general, it may be said that if unusual variations in gas quality occur through mixing, pressure variations will have to be restricted.

While domestic appliances will be tested chiefly for the effect of variations on combustion, a number of other observations will be made, such as tendency toward flash back, blowing away of flames, a comparison of rate of service to the consumer as the gas varies, etc. It has been estimated that the first series of tests above may possibly require from four to five thousand tests and observations. The total time required for the

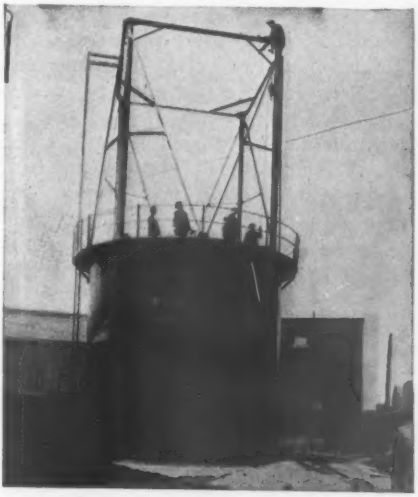
investigation will probably be between three and four years, with a total cost upward of $30,000.

The initial series of tests on the specific gravity variation is practically complete. This phase of the problem should be completed by the next annual convention of the association. Although our progress to date may appear to be slow, several facts should be taken into consideration.

In order to get under way on any large research problem, such as the one on mixed gas research, there must naturally be a great deal of planning and construction completed before the testing can be started. Much of this work is not tangible and cannot be reported in actual figures. However, the success or failure of research work may often be found in the type of set-up, the initial planning and construction of the apparatus used. The Testing Laboratory, realizing the importance of the utilization of mixed gases, has carried this work forward with the greatest possible speed consistent with thorough planning.

Since the authority to proceed was given to the Laboratory, the following construction and preparation of testing apparatus has been completed: 1. Erection of a new 5,000 cu.ft. gas holder. 2. Erection of a booster and purifying house. 3. Laying of about 1,200 ft. of 4-inch gas line and 200 ft. of 3-inch gas line. 4. Installation of two small purifying boxes and a gas booster. 5. Purchase, arrangement, and connection of appliances to be used during the tests. 6. Edwards density balance placed. 7. Preparation of iodine pentoxide apparatus.

The Laboratory, in conjunction with the Mixed Gas Research Committee, has outlined an extensive series of tests to determine the extent of the effects mentioned previously. The first series of tests is designed principally to determine the effect of variations in specific gravity. Two basic gases will be used in these tests—a by-product coke oven gas of about 550 B.t.u. and 0.37 specific gravity; and a carbureted water gas of the same heating value and about 0.65 specific gravity. Mixtures of these two gases will be made over the whole range from straight coke oven to straight water gas, the variation in gravity being held to five point increments or less. All appliances used in the tests will be adjusted on one gas and carried sufficiently far through the range to find out what variation can be tolerated with it. The appliances will be adjusted for the first part of the tests, at least on each mixture and the above procedure repeated. By this means it is hoped that a complete isolation of the specific gravity effect can be secured.



New holder erected by the laboratory for use in mixed gas research

After this series of tests has been completed, another series using coke oven gas of a higher heating value than the water gas will be undertaken. The heating value of coke oven gas will be reduced to that of the water gas by introducing producer gas. The resultant gas will then be mixed with the water gas and tests conducted with a number of mixtures.

The first gases of varying heating values to be mixed will be natural gas and water gas. Tests will be made with

both carbureted water gas and blue gas mixtures. The effect of variations in heating value will also be studied by using a series of water gases of various heating values.

A number of tests will be made which cover simultaneously changes in both heating value and specific gravity—for instance, mixtures of natural gas with by-product coke oven gas. It should be noted that the by-product coke oven gas to be used in the mixtures is very similar in composition to much of the oil gas made on the Pacific Coast, so that the tests will cover most of the gases now being served in this country. Plans are also being made to study the possibilities of enriching manufactured gas with small amounts of natural gas.

The tests outlined above will be made with a number of different appliances. It was felt that such an extensive investigation merited extreme thoroughness and should not depend upon tests of two or three appliances. Accordingly the following domestic appliances were selected: Three ranges, one with a "star burner" and straight bar grates, one with a radial burner and radial grates, and one closed-top range; three radiant heaters, one with separate mixing tubes for each burner tip using a grid tip, one with single mixing tube and grid tip, and one with single mixing tube and round ports. All of the ranges and space heaters have been approved by the Laboratory. The water heaters being used are: One side arm automatic storage, one central flue automatic storage using the Barber burner, and one instantaneous heater. A boiler is also being used throughout the tests.

Two industrial appliances are being tested. One is a cutting torch and the other a furnace which may be used either with high pressure gas or high pressure air. The furnace is representative of a large number of industrial appliances now in use. The selection of the cutting torch was based on the fact that its successful use requires a very careful adjustment, and that harmful effects of variations would appear more quickly with it than with any other general type of industrial appliance.

The wide range of the gas mixtures to be used in the tests and the number of appliances involved should make the results sufficiently thorough to answer the fundamental questions arising from the distribution of mixed gases. The investigation should not only serve as a guide in the selection of gases to be used in mixing, but should point the way to betterment of service conditions, in sections where mixed gases will be served.

Brooklyn Union Conducts Employee Essay Contest

MUCH interest is being shown by the associates of The Brooklyn Union Gas Company in the essay contest which started June 1.

The company is offering $500 in prizes to the employees for the best essays on the gas industry. The title of the paper is to be "The Influence of Gas Service in the Growth of Brooklyn."

There will be a $150 capital prize, second prize $75, third $50, and fourth prize $25. There will also be ten honorable mention prizes of $10 each.

A fund of $100 has been set aside to be apportioned to those making the best suggestions for the improvement of the gas industry in Brooklyn.

The contest is limited entirely to employees. The committee in charge are George M. Kirchmer, E. J. Devlin, E. C. Uhlig, and E. H. Marsh.

The final judge of the papers will be Alexander Forward, managing director of the American Gas Association.

The contest will close on August 1 and prizes will be awarded in September.

A SUGGESTION

WHEN Committee Chairmen and others use Association stationery in their correspondence, it will be assumed that unless their own address is written on the letter it is desired that replies be directed to the writer in care of Association Headquarters, for attention by the Secretary interested. When it is desired that a reply be directed to the writer at his home address, care should be taken to place the address on the letter. This reminder is given as a result of several suggestions.

Automobile truck operated on natural gas at N. G. A. convention

Gas Does It Better Than "Gas"

Automobile Truck Running on Natural Gas Is Featured at Convention in Cincinnati

By ALVIN M. FORKNER
In *Hail Columbia!*

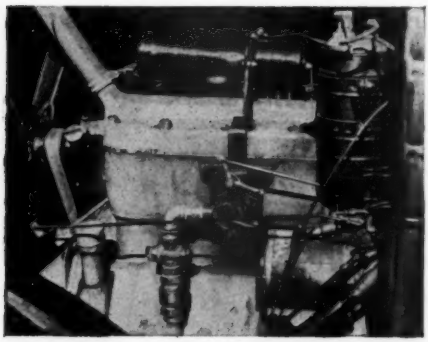
THE twenty-second annual convention of the Natural Gas Association of America, held at Music Hall in Cincinnati, Ohio, May 9-10-11-12, had as one of its principal features the running of an automobile truck with pure natural gas, supplied by The Union Gas & Electric Company. The truck, 24 horsepower, was operated five hours daily for the duration of the convention, a total of 20 hours in the four days.

Although no thorough investigation has been made to back it up, it is believed that this was the first time that a motor car was ever driven over city streets, using pure natural gas as fuel. Certainly it was the first time it had ever been done in Cincinnati or as the feature of a natural gas convention.

The operation of the natural gas truck proved highly successful. Gas takes its hat off to no other fuel for ordinary purposes, figuratively speaking, even when it is combustion instead of heat that is required. Natural gas has long been used in compressor station engines with good results, so that the business of adjusting it to a less powerful engine required but little ingenuity on the part of those that worked with it, in spite of the fact that they were working with an engine designed to burn gasoline.

Outwardly the only change necessary to convert the gasoline car into a natural gas-burning one was to replace the gasoline tank with a tank for the storage of natural gas, and to use an air-mixer in place of the gasoline carbureter. Strictly speaking, however, this was not the case. Experiments had to be made and various attachments designed before the car was ready to be taken out upon the streets, powered with natural gas.

At first an ordinary carbureter was tried out as a means of mixing the natural gas and air before its entry to the cylinders. It was found out by Fred Heinlein, garage superintendent of The Union



Closeup of engine showing air mixer

Gas & Electric Company, builder and designer of the natural gas car apparatus, that an ordinary carbureter would work by using the suction line leading from the vacuum tank as a connecting place for the natural gas line, and using the choke to operate the air mixture. But it was found that this arrangement would not develop the proper efficiency.

Then a "home-made" air-mixer was tried out, with fair results. Natural gas and air were mixed in this device and passed into the motor through a butterfly valve. This gave better results due to the better mixture of gas and air. It was then decided to get one similar to those used by various automobile manufacturers for "running-in" motors by the use of natural gas. The mixer decided upon admitted eleven parts of air with each part of natural gas. It is shown in the motor close-up picture.

The next problem to present itself was that of securing a suitable tank for the storage of natural gas under high pressure. Preliminary tests were made with a tank 22 inches in diameter by 48 inches long, made of half-inch steel plate. As the tank must be capable of withstanding an initial gas pressure of more than 200 pounds per sq.in., it had to be very strong and meet a certain specification of safety. The tank used had steel heads, one-half inch thick, butt joints and was double riveted. Its size was 36 inches in diameter by 58⅝ inches in length and it had a capacity of 32.72 cu.ft.

The tank was mounted on a cradle, lengthwise in the rear end of the truck. Two regulators governed pressure, one lowering it from around 200 pounds down to 20 pounds and the other lowering it from 20 pounds to between four to four and one-half ounces water pressure at the air-mixer, where it entered the motor.

Connections were composed of one-half inch galvanized iron pipe all the way through, with a one-half inch check valve and a one-half inch cock. All of the block work, connections and other apparatus necessary for the installation were made by Mr. Heinlein.

The operation of the car was just the same with natural gas for fuel as with gasoline, the foot acceleration serving to open and close the air-mixer and thus control the speed of the car, the range of which was from three to forty miles per hour.

The results certified to showed that 1461.42 cu.ft. of natural gas were used to operate the truck 147.2 miles throughout the congested business and residential sections of Greater Cincinnati. The load carried included one driver, one observer and the natural gas tank, which weighed 1,699 pounds.

The initial gauge pressures ranged from 198 pounds to 225 pounds per sq.in.; the final pressures ranged from 30.2 to 58 pounds per sq.in. The temperature of the natural gas ranged from 50 degrees to 89 degrees Fahrenheit.

Affidavits show that the truck ran exactly twenty hours during its four-day run.

From the foregoing results it is evident that approximately ten cu.ft. of natural gas were used to operate the truck one mile, and as the gas contained an average of 1110 B.t.u. per cu.ft. this would mean a total of 11,100 B.t.u. per mile. Let us say it was about 12,600 B.t.u. per mile.

The cost of 12,600 B.t.u., as purchased

(Continued on page 444)

First Production Conference Attracts 300

Excellence of Program and Type of Meeting at Detroit Please Technical Men of Industry

THE first annual production conference, held under the auspices of the Technical Section, attracted more than 300 interested gas men to Detroit, Mich., on May 31 and June 1. This type of mid-year meeting, which has proved so popular among the distribution men of the industry, favorably impressed the production engineers, and there is every indication that the meeting will be continued as a yearly feature.

R. G. Porter, chairman of the Carbonization Committee, and Henry Fink, chairman of the Water Gas Committee, had arranged a particularly interesting program. They were assisted by H. W. Hartman, assistant manager of the A. G. A. and secretary of the Technical Section.

W. C. Beckjord, chairman of the Technical Section, gave an interesting resumé of the work of the Section. He stressed the necessity of the industry getting its fundamentals in order.

A. W. Warner, Chester, Pa., presented the "Summary of Coal Gas Production," in which he quoted the results from a questionnaire. He called attention to the wide variation in the definition of the terms base load and peak load. Coal gas was favored as the base load gas, and carbureted water gas was favored to meet peak load conditions. Mr. Warner also stressed the importance of lower heating value standards, as this seems to be an obstacle to the successful development of complete gasification methods. The convincing of the public, the commissions, and the gas companies that lower standards will prove sounder economically than the higher standards, will be a stimulus to complete gasification.

In the discussion the importance of Mr. Warner's suggestion for common definitions of base and peak load was brought up. The base load as the average day for the minimum month, and peak load as the maximum day was favored by many because of its simplicity. The matter has been referred to a committee for action.

A progress report on "Present Production Methods" was presented by L. J. Willien, of Chicago, Ill. In this Mr. Willien mentioned the assignments of the Sub-Committee on Production, which has been given them by the Committee on the Economic and Engineering Survey. Production, equipment, plant layout, etc., are all being considered.

CLINKER FORMATION

E. J. Murphy, Brooklyn, N. Y., presented a particularly interesting paper on an investigation of clinker formation in water gas generators. There is a wide variation in the percentages of carbon and ash between fuels of the same type, according to the results of a questionnaire. Practically all companies using bituminous coal claimed little or no trouble from clinker, while generator lining trouble and side wall clinkers seemed to be the rule when coke was used.

"The Relation of Fusibility of Ash in Coal and Coke to Clinker Formation," by P. Nicholls, of the U. S. Bureau of Mines, was an interesting paper on an investigation of the relation of ash fusion temperature to fuel bed refuse and the connection between theoretical and actual burning of coal. In general the clinker decreases as the softening temperature increases.

In the discussion that took place on the papers by Mr. Murphy and Mr. Nicholls, there was considerable difference of opinion expressed. The need for scientific research was brought out.

Philip E. Eddy, of Chicago, Ill., in

his summary on "Gas Oil," stressed the fact that most companies are using good grades of gas oil and have not radically changed operating methods. Oil from 30-36 deg. Baume is used by 19 companies; from 26-36 by ten companies, and 13-18 by four companies.

Dr. T. A. Mighill, Pawtucket, R. I., explained his method of evaluating gas oils in a paper on "Analysis of Gas Oil for Series of Hydrocarbons." The paraffin series seems to be desirable in gas oil, while the aromatics are not, except when dealing with a dry gas. Since the naphthalenes give off a great deal of hydrogen, oils containing large amounts of naphthalene show a greater number of cu.ft. of oil gas made per gallon of oil.

W. J. Murdock, Joliet, Ill., presented a very valuable paper on "Soft Coal Operation." A large chart was demonstrated that gave the details of water gas practice, and the results of 39 reporting gas companies.

SUMMARY ON COKE

The coke summary was given by Mr. Eilers for A. M. Beebee, of Rochester, N. Y. In the preparation of coke for sale the following qualities should be considered, in their order: Size, ash, quality, cleanliness, moisture, clinker tendency, volatile content, structure, strength, weight, appearance, sulphur content, and reactivity. The quality of the coal controls the ash content, strength, size clinker tendency, structure, density, volatile and sulphur content, reactivity, and appearance. Plant equipment controls size, cleanliness, moisture, weight, structure, volatile matter, and strength. Plant operation influences size, strength, volatility, moisture, cleanliness, density, and structure.

As many companies screen before stocking as do not, and the average breakage resulting from stocking and reclaiming was 9.7 per cent. The cost to stock and reclaim averaged 74 cents a ton.

J. D. Davis, of the Bureau of Mines, gave a paper on the reactivity of cokes with air, carbon dioxide, etc. With all types of cokes, it was found that the dull coke was more reactive than the brighter coke.

"The Burning Properties of High and Low Temperature Cokes," by P. Nicholls, considered the effect of size of coke pieces on the burning characteristics of the fuel beds of domestic boilers. Three different types of cokes in several sizes were tested. Charts showed that as the coke size increases, the burning rate decreases. The air required also decreases with an increase in the size of coke.

A summary on "Inerts" was given by S. B. Sherman, Racine, Wisc.

MIXED GAS RESEARCH

G. B. Shawn's paper on "Research in Utilization of Mixed Gases," was a report on the work being undertaken at the Testing Laboratory at Cleveland. Mr. Shawn's paper is printed elsewhere in this issue.

Mr. Weigele presented the summary on "Liquid Purification" for G. E. Wagner, Madison, Wisc. Greater flexibility, removal of impurities other than hydrogen sulphide, etc., were listed as advantages for liquid purification.

O. H. Smith, New York, N. Y., gave a summary on waterless gas holders. The reporting companies used water gas tar in the piston sealing system. From two hours to continuous inspection was reported for the amount of labor spent in operation.

In the discussion it was brought out that one 15,000,000 cu.ft. holder costs $12.23 a day to heat, using 40-cent steam.

T. B. Hopper, Washington, D. C., stressed the need for all companies to keep daily operating results in a form which shows gas made and sent out, fuel of all kinds used in manufacture, essential efficiencies, etc.

E. J. Boothby, Fall River, Mass., presented a miscellaneous summary in which he covered ammonia disposal, naphthalene scrubbing, etc.

Gas in Competition With Other Fuels

The Domestic Load from the Natural Gas Standpoint, with Suggestions That Apply to Manufactured Gas as Well

By GEORGE E. WHITWELL
General Sales Manager, Equitable Gas Co., Pittsburgh, Pa.

G. E. Whitwell

IT is difficult to think of competition without associating it with price. Generally speaking, the price of an article compared with the price of another article is an important, if not the most important, first consideration to the purchasers considered as average.

Second thought, however, indicates that price alone may be only one factor, and often a very small factor, in determining the value of any article. This is true of fuels. With them, our interest is not primarily in the cost of the fuel itself, but in the cost of the accomplishment of a unit of work. Even then, value may not be entirely determined, for there may enter other considerations. Convenience, cleanliness, healthfulness, economy of time and excellence of the finished product have a very important bearing upon the choice of fuel and, within reasonable limits, tend to offset an adverse price.

Generally speaking, it isn't the cost of a fuel that counts; it's the cost of using it. Nevertheless, it is of interest in any study of natural gas to look into this matter of price and review a little the circumstances which have determined costs as they are found today.

Natural gas started out, in most cases, with coal and wood as competitors. When gas was first offered to the public, coal and wood had been used for cooking and house heating, and coal had been used by industries. In other cases, coke, oil, and kerosene were competitors of the new fuel.

It was considered necessary, at first, to price gas so that it would cost less than the principle sources of heat energy. In many localities, flat rates per month of so much per stove or room or range or other gas equipment were charged.

There were no inducements, with flat rates, to purchase economical burners and equipment or to use gas carefully. Therefore, crude burners were installed in appliances designed for other fuels. Gas was wasted. Hazards were developed in the use of gas. Unsatisfactory service was common. A very false impression regarding the real value of natural gas was developed. The regard of communities for their gas companies was far from the best. Serious lack of confidence in the dependability of the supply of gas grew without restraint.

When well productions declined and fields were extended, the necessity arose for price increases. Reasoning that natural gas rates were once lower, the public concluded that gas had become expensive. Having no definite knowledge as to actual relative cost of different sources of heat energy, and instead of comparing the cost of using gas with the cost of using other fuels, it was easiest to compare existing gas rates with previous gas rates.

The present generation of gas men has faced a general mistaken idea as to the value of gas for domestic, commercial and industrial uses and also as to the merits of gas such as dependability, cleanliness, control, safety and convenience.

Any comparison of the cost of fuels must necessarily be based upon local con-

From *Oil & Gas Journal.*

TABLE I—Relative Base Fuel Costs

Fuel	Unit Cost	Heating Value B.t.u.	Cost per Million Heat Units
Natural Gas	$ .60 per MCF	1,100 per Cu.Ft.	54.5c
Natural Gas	.45 " "	1,100 " " "	40.9c
Manufactured Gas	1.25 " "	530 " " "	235.8c
Bituminous Coal	6.50 " Ton	13,500 " Pound	24.1c
Anthracite Coal	15.00 " "	12,500 " "	60.0c
Coke	10.00 " "	12,500 " "	40.0c
Fuel Oil	.07 " Gal.	140,000 " Gallon	50.0c
Kerosene	.13 " "	125,000 " "	140.0c
Wood	7.00 " Cord	7,500 " Pound	24.6c

ditions. For purposes of illustration, current prices to the domestic trade in Western Pennsylvania have been used. Table I shows the relative cost of base fuel without taking into consideration utilization efficiencies or auxilliary costs.

To some of the bare fuel costs must be added other items in order to obtain the total cost per heat unit. For example, to the cost of coal must be added the cost of kindling, the cost of removing ashes and other items. To the cost of oils must be added all or some of the following: Leakage, pumping costs, air or steam for atomization and maintenance of equipment. In order to obtain a true comparison of gas and other fuel costs, it is necessary in the case of all other fuels to add fuel handling and maintenance costs.

Even with the addition of these factors to the bare fuel costs, we have obtained only the gross cost of the fuel. These gross costs must be further corrected by considering the utilization efficiency or the percentage of total heat which can be put to useful work. Let us take for example, the usual efficiencies as found in domestic house heating.

Gas boilers and furnaces	75%
Gas burners in coal equipment	40% or less
Coal	25–40%
Oil	50–65%

It can easily be seen, from this one example, that very erroneous ideas as to the costs of using various fuels would be obtained from comparisons which do not take into account the utilization efficiencies. The figures for gas in appliances designed for its use and gas in coal equipment also show that the method of use is of utmost importance.

The housewife of the present day is unwilling to fire a kitchen range with coal or wood when gas, electricity or oil can be had. The convenience factor has become more important than mere cost. The time element is also important.

Cooking tests made at The Ohio State University in 1927 resulted in the following figures for a dinner for six people:

Fuel	Unit Cost	Amt. Required	Total Cost
Natural Gas	$ .60 per MCF	22.0 Cu.Ft.	1.3c
Soft Coal	6.50 " Ton	7.8 Pounds	2.5c
Coal Oil	.15 " Gallon	2.3 "	5.4c
Gasoline	.27 " "	1.1 "	4.6c
Electricity	.03 " kw.hr.	1.7 kw.hr.	5.1c

To illustrate further the difference between bare cost of fuel and the cost of using it for cooking, we may cite a test made in New England where manufactured gas for cooking costs no more than anthracite coal after actual heat utilized, cost of kindling and handling costs were considered. Table I in this article would indicate a ratio of four to one, but the final cost figures are quite different.

While it is impossible to treat in so small a space the question of the true place that price must take in any consideration of the competitive value of fuels, enough has been brought out to indicate that price cannot be separated from efficiency. If we consider price at all, we

are not considering the price of a heat unit in the raw fuel, but we are considering the cost of the delivery at a desired place of sufficient heat units to accomplish a given object. The question of efficiency cannot be neglected, neither can we neglect the operation and maintenance costs which accompany heat utilization, nor in fact can we neglect in the ultimate analysis such costs as the fixed charges on equipment.

Natural gas for domestic use in competition with other fuels immediately, therefore, becomes dependent upon the equipment used for its combustion, and it is well for us to consider carefully the question of the kind that is found upon the lines of natural gas companies and whether the problem of domestic gas sales does not depend largely upon the installation of better, safer and more efficient equipment.

As previously pointed out, natural gas companies have been handicapped by the wasteful appliances used by their customers. Government publications have shown the immense amount of gas wasted by low-set cooking range burners, short coil water heaters and burners placed in appliances which were designed for the use of solid fuels. Most gas companies have made progress in informing the public regarding more modern appliance design, proper burner adjustment and correct usage. Recommendations have not been uniform because they have been based on local laboratory tests, published data from various sources or merely ideas of the particular individuals coming in contact with the public.

Now, however, a definite and forceful help, a national institution with a national viewpoint, has stepped in to help us. The American Gas Association Testing Laboratory is at work testing various kinds of gas appliances. Approval requirements for ranges, tubing, space heaters, water heaters, gas furnaces, and gas boilers have already been drawn up and lists of many approved appliances bearing the Blue Star of Approval have been published. Tests are made with different gases under varying conditions so that the approval of the Laboratory is national in scope.

1823—MORE THAN 100 YEARS OF UNINTERRUPTED PUBLIC SERVICE—1927
In this Building Beautiful are the Flames that Freeze
THE LOMBARDY, one of New York's finest
CONSOLIDATED GAS COMPANY OF NEW YORK

This advertisement, appearing in several nationally circulated architects' and builders' magazines, is the first that a local utility has placed to advance the industry nationally

The effect of the Laboratory must be to improve the safety, economy and general satisfaction of gas appliances. The gradual elimination of poor appliances must raise the level of gas utilization. The appreciation of gas by the general public due to greater satisfaction in its use and the wider use of gas must result. Thus the competition from other fuels will be minimized.

While natural gas competition is usually considered as competition from other sources of heat energy, the following passage from the booklet of the American Gas Association describing "The Blue Star Plan" is of interest:

"Our big competition today in the domestic market is not solely with competing fuels,

such as oil, coal and electricity. Equally important are the other products designed to increase the comfort of the home, with which we must always compete for our rightful portion of the housewife's time and attention, and for our share of the dollar she is spending. This variety of competition can be met only by shaping our sales program in a concerted manner, surrounding our product with new styles, fads and habits of a more interesting nature to women, and through a systematic sales follow-up, maintaining that interest at all times.

"The Blue Star Plan meets the necessity for presenting our product in a newer and more interesting and attractive aspect today, by establishing an entirely new standard of gas service for greater home comfort and convenience locally and by tradesmarking and featuring that trademark thereafter locally and nationally.

"The primary purpose is to sell more gas by providing for the installation of more and better appliances in the home, and by creating and retaining in the minds of the home makers, a greater appreciation of the importance of domestic gas service as an aid to their comfort and convenience.

"The feature of the Plan regarding the use of high-grade appliances, constitutes to some extent the fulfillment of a public responsibility. It arises from the desire to create a demand for domestic appliances constructed in accordance with standard specifications of the industry, to safeguard the public health, and to guarantee efficient and satisfactory service to the customer, and thus fulfill our obligation to the American public. But the commercial results of trademarking and thus encouraging the sale of better appliances are not less important to the industry than its significance from the standpoint of safety. Just as a poor appliance is a handicap to greater sales of gas and an invitation to our competitors, so a quality appliance, rendering satisfactory service day in and day out, is the industry's better salesman for promoting the use of gas in the home."

There are other phases of competitive value, some difficult to measure.

Gas is convenient. It is clean. It can be easily controlled. It is instantly available. It requires no storage, no preparation, no labor in handling, no removal of refuse and no specially skilled operators. It can be burned without smoke or objectionable odors. It is paid for after use.

To be specific—gas in the laundry can heat the water, boil the clothes, keep the water in the washer warm, dry the clothes and supply the heat for ironing them. The majority of operations can be automatically controlled. The laundry is clean and a pleasant place in which to work and the total work is minimized. No other fuel is so useful while making possible such great economies.

How else can water be heated so conveniently and cheaply as by an automatic gas water heater? Hot water always available at a uniform temperature, in any quantity desired and at a cost, at most, of but a few cents a day, is a service which any household should be able to buy.

While facing competition from other fuels, gas itself has entered as a competitor. The gas refrigerator, now available in at least four different makes, gives promise of becoming a large factor in the field of mechanical refrigeration.

Although gas has its competitors in every one of its many applications, its use in the modern appliances with a complete understanding of its manifold advantages and backed by the helpful cooperation of the gas company with its customers, leaves competition as a help to further advancement rather than a hindrance to the progress of gas.

When you buy household gas equipment —

Buy Improved Equipment

"Approved" equipment means—approved for efficiency, durability, reliability—by The American Gas Association Testing Laboratories. Gas is the cleanest, most reliable, most labor-saving domestic fuel. Its highest efficiency is obtained through the use of approved appliances.

Look For The Blue Star Appliance

Label—The Symbol of Approval

GEFFINE & CO., Boston, Mass.

OLD COLONY GAS CO. East Braintree, Mass.
DEDHAM & HYDE PARK GAS CO. Dedham, Mass.
AND OTHER GAS COMPANIES

When you buy a home equipped with a

1927 Model Gas Kitchen

you will be assured of a well constructed home throughout plus—

The completely equipped gas kitchen is the ultimate convenience in the modern home, the most improved agent for preparing and refrigerating food, disposing of household waste, providing hot water for household cleanliness, and for personal toilet—for inserting comfortable temperature at all times—permitting clothes to be washed, dried and ironed under conditions of utmost cleanliness.

You enjoy the comfort and convenience of gas service for one or many purposes. A 1927 Model Gas Kitchen will enable you to enjoy all the economies and conveniences of gas service for all purposes.

A FEW OF THE MANY BUILDERS FEATURING THESE HOMES:

NORFOLK BUILDING TRUST, 181 Webb St., Weymouth, Mass.
CLYDE W. FRYE, So. Franklin St., Holbrook, Mass.
SWANSON & OSMAN, 75 Coolidge St., Dorchester, Mass.
C. V. DOUSE, 873 Billings Rd., Norfolk Downs
T. M. CHISOLM, 220 Pine St., So. Weymouth, Mass.
LEROY HILL, 434 Hancock St., Norfolk Downs, Mass.
E. J. PERRY, 332 Mt. Vernon St., Dedham, Mass.
THOMAS CARR, 140 Elm St., Braintree, Mass.
PETER F. SULLIVAN, 72 Pierce Road, Weymouth, Mass.
T. A. DONELLAN, Narragansett Rd., Weymouth, Mass.
C. L. HARLOW, 384 Arlington St., Wollaston, Mass.
T. H. ROGERS, 5-6 Room Bungalows, 18 Field Ave., Weymouth, Mass.

Local use of the Blue Star Plan

Mohonk Conference Considers Aspects of the Domestic Load

THE Fourth Annual New York Regional Sales Conference, held at Lake Mohonk, May 25-29, goes on record as being one of the best conferences held by this regional group. More than 250 were in attendance, and despite poor weather, the feeling was unanimous that a good time was "had by all" in addition to the valuable ideas and merchandising hints gained.

The chairman of the New York Regional Sales Council, G. M. Karshner, New York, N. Y., presided the first day of the conference; W. A. Morris, Brooklyn, N. Y., the second day, and E. R. Acker, Poughkeepsie, N. Y., the third.

T. R. Beal, president of the Central Hudson Gas and Electric Corporation, was the first speaker, and he extended to the delegates the hospitality of his company. He outlined present conditions in the domestic field, and called attention to the need for a broader view of merchandising. He also mentioned the important influence that rates bear in the development of the domestic load.

R. M. Searle, Rochester, N. Y., commented upon the commercial opportunities of both the domestic and industrial business. In Mr. Searle's opinion there are three important problems before the gas industry today. There are the new fields for commercial development, the need for proper rates, and the importance of salesmen's compensation.

B. H. Gardner, Hammond, Ind., presented a very interesting paper on the selling of water heating. In great detail he covered the various steps in the marketing of this service, outlining what is certainly one of the most important developments in merchandising in the past year.

Anthony J. Peters, New York, N. Y., supplemented Mr. Gardner's remarks on water-heater sales by considering the large-volume field. He gave his experiences in selling hot-water service to hotels, apartment houses, and restaurants. He stressed the importance of a minute survey before the installation in order that the gas installation made will be adequate to fill all needs.

N. T. Sellman, New York, N. Y., in his talk on refrigeration by gas outlined merchandising policies for the sale of this new appliance. Mr. Sellman feels that the gas refrigerator can be sold, but that gas companies must organize their sales department in order to accomplish the desired results. It is a specialty appliance, and training is necessary if the men are to be successful.

THE BLUE STAR PLAN

Alexander Forward, managing director of the American Gas Association, opened the second day's session with a review of the work that the Commercial Section of the A. G. A. is doing. He explained the details of the Blue Star plan of merchandising, and gave some very pertinent information on the central testing laboratory.

A. J. Gonnoud, Brooklyn, N. Y., presented a very interesting paper that was of considerable appeal to the delegates from the metropolitan and suburban districts. His topic was the sale of gas in growing territories. Since Mr. Gonnoud is located in a section that has become more or less famous for its rapid growth in the last few years, he spoke with the authority of actual experience.

George B. Hotchkiss, professor at New York University, presented a paper on the use and importance of surveys as aids for the merchandising of gas. Mr. Hotchkiss stressed the point that it is only through knowledge of the actual potential market that it is possible for the sales department to plan intelligently any

activities. Mr. Hotchkiss's paper is printed in this issue of the MONTHLY.

A. W. Baker, Kansas City, Mo., presented an interesting paper on gas range sales. The problem that Mr. Baker's company had to face was to increase the sales of gas for domestic purposes and to prevent business from slipping away.

The home service aspect of the commercial business was presented by Mrs. Marjorie Pidgeon Wardman, Coney Island, N. Y. Mrs. Wardman discussed the relation that must exist between the home service department and the other departments of the company.

J. L. Farrell, Passaic, N. J., presented one of the most interesting papers at the conference, his subject being the oven heat control. A survey made by his company checked the influence that the oven heat control has upon gas consumption. The significant point brought out by Mr. Farrell was that this appliance needs a certain amount of home service or demonstration work in order to make it a real load builder. He quoted figures from the survey he has made, and proved in a conclusive manner that his points were well taken.

G. I. Vincent's paper on house heating was read by R. L. Manier of Syracuse, N. Y. This paper tackled the house heating problem from a rather different angle than has been considered in the past, and emphasis was placed upon the need for proper rate structures. The Syracuse Lighting Company has been especially active in the development of the house heating load, and the valuable experience gained thereby was incorporated in Mr. Vincent's paper.

Fireplace heating was the topic presented by Frank D. Tansey, Brooklyn, N. Y. Mr. Tansey outlined briefly the details of the merchandising program undertaken recently by the Brooklyn Union Gas Company, and brought out many salient and pertinent facts.

The laundry side of the commercial business was covered by A. M. Evans, Federal Electric Co., Chicago, Ill. Mr. Evans, speaking from the manufacturers' viewpoint, went into great detail about the home laundry load, explaining that while the laundry equipment is not used every day of every week, the active merchandising of laundry equipment will do a great deal to increase the domestic load.

H. D. Valentine, Poughkeepsie, N. Y., took as his subject the incineration by gas problem. This comparatively new

(Continued on page 442)

TESTING LABORATORY
AGA
APPROVED

The Blue Star of Approval

and what it means

Never before have the interests of the buying public been so extensively protected as today—by the action voluntarily of prominent manufacturers and distributors in forming associations which have adopted policies to this end, in many lines.

The American Gas Association is such a voluntary organization of prominent gas companies, manufacturers of gas burning appliances, etc.

This Association has taken the best experience and opinion available, upon which have been based specifications, rules and requirements to insure the maximum of safety in gas burning appliances of all kinds, and particularly as used in the home.

Those appliances which are found to conform to the requirements laid down—which is determined by thorough test at the well equipped laboratory of the Association in Cleveland—are given the Blue Star of Approval and the right to affix this seal to the appliance and descriptive matter.

We are proud of the fact that the Reznor Manufacturing Company—a member of the American Gas Association—has worked wholeheartedly to meet all requirements for this Approval on Reznor Heaters.

The buying public is being rapidly informed of the Blue Star Approval and the wise dealer will protect himself and his trade by handling heaters,etc., so Approved.

Reznor Gas Heaters are always sold with the guarantee: "Satisfaction or Money Refunded."

A page from the catalog of the Reznor Manufacturing Company

TIDE OF MEN AND AFFAIRS

Proud recipients of Bodine award

Six Men Receive Bodine Meritorious Service Award

IN the presence of 400 officials of The United Gas Improvement Company and Associated Companies, in attendance at the annual U. G. I. Management Conference in Philadelphia, six men received the first Samuel T. Bodine meritorious service awards. The presentations were made by Mr. Bodine, Chairman of the U. G. I. Board of Directors, at the opening session of the conference on May 17.

The Samuel T. Bodine meritorious award was established by The United Gas Improvement Company for U. G. I. and Associated Company employees "for extraordinary effort, without regard to self, toward maintaining uninterrupted service, or toward restoring interrupted service, or in some manner indicating exceptional fidelity to the public interest."

The first medal struck was presented to Mr. Bodine by Philip H. Gadsden, a vice-president of the U. G. I. and chairman of The U. G. I. meritorious award board, for "forty-five years of unceasing devotion to promotion of the highest standards of public utility service throughout the United States."

Mr. Bodine, who received a three-minute ovation, was deeply affected by the tribute and the reward. In a brief address, he said: "I consider this award not as a personal one, but that it is presented to me as a representative, and I accept it as a well-merited recognition of the efforts of many men who have devoted their lives to public service during the past forty-five years."

The other awards were made to:

Edmund Thayer, manager, oxygen-acetylene department, The U. G. I. Contracting Company, for removing filled cylinders of oxygen and acetylene gas from contact with a cylinder of burning acetylene gas.

Mr. Thayer, from his office on the 8th floor of the U. G. I. Building, Broad and Arch Streets, saw an acetylene gas cylinder on fire in a construction yard across Arch Street. The cylinder was closely surrounded by many other cylinders filled with oxygen and acetylene. All of the men in the construction yard had hurried from the vicinity of the burning cylinder. Thayer ran across to the yard, and disregarding warnings, proceeded to move filled cylinders away from the burning cylinder. The danger of explosion was great since the burning acetylene gas was heating other oxygen cylinders (filled at 2000 pounds pressure) and acetylene cylinders (filled at 350 pounds pressure), so that the gas in the cylinders was increasing in temperature rapidly and tending to expand. If one cylinder had ruptured, the concussion probably would have exploded all other cylinders. When the fire department arrived, the firemen wished to use water on the fire, but Thayer made the men use wet bags. This prevented the cylinders from rupturing owing to too rapid cooling of metal.

Howard T. Jayne, general main and service foreman, Philadelphia Gas Works, for assisting in the capture of four bandits who attempted to rob a messenger of the Olney Bank & Trust Company, Philadelphia, on May 4, 1926.

Charles J. McCready, caulker, Philadelphia Gas Works, for the capture of one of four bandits who attempted to rob a messenger of the Olney Bank & Trust Company, Philadelphia, on May 4, 1926.

Foster Corn, night foreman, Nashville Gas & Heating Company, Nashville, Tenn., for maintaining uninterrupted gas service to Nashville, by plunging through live steam to put spare boiler feed pump into action, when the active pump broke down.

G. L. Horner, erecting engineer, The U. G. I. Contracting Company, for exceptional effort, although badly burned, in maintaining uninterrupted gas service to Lebanon, Pa., and other localities, when a high pressure main caught fire on April 30, 1926.

William Lewis Brown, inspector, The Syracuse Lighting Co., Inc. (certificate) for stopping the serious escape of gas in a burning building in Syracuse, N. Y., that endangered the lives of firemen.

Wilbert J. Huff

WILBERT J. HUFF, Professor, Gas Engineering, The Johns Hopkins University, Baltimore, Maryland, was given the honorary degree of Doctor of Science on May 24, 1927, by the Ohio Northern University. Professor Huff was once a student at the Ohio Northern University, later attending the Yale University from which he received his A.B. and Ph.D degrees.

The Ohio Northern University has granted degrees to a number of very prominent people. It was the first University in this country to give an honorary degree to President Warren G. Harding, a number of years before he became President. It also has among its alumni three United States senators, namely, Senators Willis, Fess, representing the State of Ohio, and Senator Robinson representing the State of Indiana, in the present U. S. Senate.

Dr. Huff was born at Butler, Pa., on October 4, 1890. He is an honor graduate of Yale College, class of 1914, and received the rating of Philosophical Oration, which is the highest honor awarded. He also received special honors in Chemistry. He took the degree of Doctor of Philosophy at Yale in 1917. While a graduate student he was Henry Bradford Loomis Fellow, a high honor, and during this period he engaged in teaching.

Since 1917, Dr. Huff has been engaged in chemical and engineering research with the Barrett Co., the United States Bureau of Mines, and the Koppers Co. He was a lieutenant in the Chemical Warfare Service in command of the Princeton research detachment. In 1920 he went with the Koppers Co. in charge of the research division of the Koppers Company Laboratories. He has under his direction a number of men engaged in various research problems connected with the by-product coke and gas industry, some in the laboratory, others in the field. This work has taken him over a wide section of the country and into all phases of the gas industry.

Dr. Huff stands ready at all times to cooperate with the men interested in the Gas Course at Hopkins, as well as with all those who may have any suggestions to make for its improvement and advancement.

CHAS. A. ALDEN, who has been comptroller of the Massachusetts Gas Companies, Boston, Mass., is now treasurer of the company.

GEORGE A. NEAL, The United Gas Improvement Company, Philadelphia, Pa., is now connected with the Iowa Public Service Co., Fort Dodge, Ia.

L. W. WADE, formerly with the Iowa Power and Light Co., Humboldt, Ia., has been transferred to Fort Dodge.

L. B. CARD, Henry L. Doherty and Co., New York, N. Y., is now with the Bristol Gas and Electric Co., Bristol, Va.

EDWARD F. DAVIS, formerly engineer with the Celite Products Company for nine years, has joined the Insulating Products Corp., New York, N. Y., as sales manager.

THE INDUSTRIAL APPLIANCE COMPANY of New England has announced the opening of offices at Providence, R. I., New Haven, Conn., and Albany, N. Y. F. L. Browne is now in charge of the Providence office. J. W. Philbrook is the New Haven representative, and E. E. Bangs will be located at Albany.

ROBERT H. KNOWLTON, formerly assistant to the vice-president of the United Gas Improvement Company in charge of operations, has been elected vice-president of the Connecticut Light & Power Company, Waterbury, Conn. A graduate of Cornell University, Mr. Knowlton has been engaged in public utility work since leaving college, joining the United Gas Improvement Company, Philadelphia, in 1910. He has been very active in A. G. A. work.

W. J. Reagan

WILLLIAM J. REAGAN, vice-president of the Utica Gas and Electric Company, Utica, N. Y., has been elected president of The Utica Rotary Club for the coming year. He takes over this office July 1st. Mr. Reagan has served as vice-president of the Rotary Club during the past year.

In thanking the Board for this honor he pledged himself to try to give "double measure." The *Rotary Bugle*, published by the Utica Rotary Club, took this statement as the subject for an editorial in its issue of April 29th.

AT the annual stockholders' meeting of Cities Service Company, held recently, Merlin Hall Aylesworth, president of the National Broadcasting Company and former managing director of the National Electric Light Association, was elected a member of the board of directors.

WILLIAM ALTON JONES, for the last two years chairman of the executive committee of Henry L. Doherty & Co., has been elected first vice-president of the Cities Service Company. Henry L. Doherty is president of the company.

Mr. Jones has been with the Cities Service organization since 1912. Until he came to New York in 1921, he was at Joplin, Mo., where he served as treasurer of the Empire District Electric Company and associated companies. Mr. Jones is an officer or director of some fifty companies, among which are Cities Service Power and Light Co., Empire Gas and Fuel Co., Ohio Public Service Co., Crew Levick Co., Gas Service Co., and Toledo Edison Co.

At the recent convention of the National Electric Light Association, Mr. Jones was elected a vice-president.

IN TRIBUTE to Colonel Henry Marison Byllesby, founder of H. M. Byllesby and Company, Henry Marison Byllesby Post No. 552 of the American Legion conducted a memorial day service Friday afternoon, May 27, at 3:30 o'clock at the Illinois Theater in Chicago.

Principal speakers on this occasion were John J. O'Brien, president, H. M. Byllesby and Company; Robert J. Graf, first vice-president; Major General George H. Harries, vice-president; and the Right Reverend Herman R. Page of Detroit, Bishop of the Episcopal Diocese of Michigan.

Upwards of 600 persons attended this service, including representatives from Byllesby operated public utility properties, friends of the late Colonel Byllesby, and employees of the Chicago office of H. M. Byllesby and Company, the Byllesby Engineering and Management Corporation, and the Shaffer Oil and Refining Company.

WALTER WHETSTONE of Philadelphia has been elected president of the Southern Cities Utilities Company, the holding company for the Southern Cities Power Company.

ANNOUNCEMENT has been made that the duties heretofore performed by George E. Whitwell as general manager of the Equitable Gas Company, Pittsburgh, Pa., have now been assumed by vice-president A. Hurlburt, with the title of vice-president and general manager.

Mr. Whitwell recently resigned to become manager of the newly organized combined general sales department of the Equitable Gas Company, Duquesne Light Company and Equitable Sales Company.

Viewing Boulder Dam

RECENTLY a party of utility men from Los Angeles visited the proposed site of Boulder Dam. Going to Las Vegas, Nevada, by train, they went by automobile across the desert to the Colorado River, a few miles above the proposed site at Black Canyon. Here they took a motor boat and went down the river through Black Canyon and back to the starting point.

In this party were A. B. Macbeth, executive vice-president of the Southern California Gas Company and president of the American Gas Association; T. J. Reynolds, counsel for the same company; F. S. Wade, vice-president and general manager of the Southern Counties Gas Company; LeRoy Edwards, counsel for Southern Counties; Ben R. Meyer, president of the Union Bank and Trust Company, and A. L. Lathrop, trust officer of that bank.

The trip was one of interest and was made without mishap. The river was very muddy, with a current flowing at approximately nine miles an hour. A view of the cliffs where it is proposed to build the dam may be seen immediately behind the group in the illustration. From left to right they are: A. B. Macbeth, Ben R. Meyer, A. L. Lathrop, LeRoy Edwards, and T. J. Reynolds.

A. F. TRAVER, utilities engineer and formerly connected with the organization of the Henry L. Doherty Company, has joined the Associated Gas and Electric System as operating manager, with headquarters at Columbus, Ohio.

Mr. Traver is a graduate of the University of Michigan. He has been affiliated with the Chattanooga Gas Company, the Denver Gas & Electric Company, and the Improved Equipment Company, of which he was vice-president.

Mr. Traver has acted as consulting engineer for investment bankers and operators in the examination and operation of gas and electric properties. During the war he served in a consulting capacity on several bureaus connected with combustion work for war purposes.

H. C. Shields

HENRY C. SHIELDS, vice-president and general manager of the Troy Gas Company since 1911, was elected president of the company recently, as announced in the June issue of the MONTHLY. He succeeds Edward Murphy, of Troy, who was elected to the presidency of the Troy Company in 1912.

Mr. Murphy's resignation followed his election to the Board of Directors of the Mohawk Hudson Power Corporation, whose policy is not to have on its Board officers or directors of its subsidiary operating companies.

William E. Murphy, of Troy, was elected a director of the Troy Company to fill the vacancy left by the resignation of Edward Murphy, and Edward Murphy was made counsel of the company.

ROBERT M. CRAWFORD, formerly with the McAleenan Corporation of Pittsburgh, has severed his connection and has opened offices in the Commonwealth Building, Pittsburgh, Pa., where he will conduct a chemical and industrial engineering business for his own account. Mr. Crawford took a prominent part on the program of the recent International Conference on Bituminous Coal at Pittsburgh last November and, among other things, his new business will include engineering service on problems pertaining to low temperature carbonization of coal.

FRANK B. HERTY, student engineer, Haverhill Gas Light Co., Haverhill, Mass., is now connected with the Fall River Gas Works Co., Fall River, Mass.

B. B. LIVINGSTON has resigned his position with the Consumers Power Co., Flint, Mich., to become associated with the Department of Public Utilities, Richmond, Va.

FRED K. FOSTER, who has been sales manager, gas department, Public Service Company of New Hampshire, Keene, N. H., is now district sales manager, with the Twin State Gas and Electric Co., Bennington, Vt.

FRANK L. KNAPP, vice-president of the Standard Gas Equipment Corp., New York, N. Y., has resigned his position as of June 1. C. F. Jacques will succeed Mr. Knapp as manager of the Aurora, Ill., plant. George Beeden, who has been attached to the New York engineering staff, has been transferred to Aurora as engineering representative.

AT A RECENT meeting of the board of directors of the Lambert Meter Company, Brooklyn, N. Y., the following officers were elected: President, David N. Lambert; vice-president, H. Lambert; secretary and treasurer, N. D. Lambert, Jr.

JOHN J. QUINN, vice-president of the Citizens Gas Light Co., Quincy, Mass., was elected president of the company at a recent meeting of the directors, to succeed William B. Nichols. Mr. Quinn joined the company in 1919 as superintendent, being made vice-president in 1923.

Mr. Nichols has been actively engaged in the management of the company for 21 years, having served as president and general manager. Mr. Nichols was elected vice-president of the Massachusetts Gas Companies, to succeed Robert Grant, deceased. In addition to Mr. Quinn and Mr. Nichols, the directors of the Massachusetts Gas Companies are as follows: E. M. Richards, J. L. Richards, S. H. Couch, and N. G. Nickerson. C. A. Alden has been elected to the post of treasurer to succeed H. C. French, deceased.

WILLIAM G. RUDD, chief operating engineer of The Peoples Gas Light and Coke Company, Chicago, Ill., has been elected vice-president in charge of operations to succeed the late John H. Eustace.

Public Service Provides for Research at Princeton

CHEMISTRY research work at Princeton University received an impetus recently when President Hibben announced an annual gift of $10,000 for the next five years by the Public Service Electric & Gas Company of New Jersey. This appropriation will be used for pure science research in the field of chemistry.

This is the first time the Public Service has made a gift to higher education. The appropriation is to be known as "The Public Service Pure Science Research Fund."

Thomas N. McCarter of Newark, N. J., president of the Public Service Corporation, said when he informed the university of the gift: "This company has for many years spent a very considerable sum of money annually in the development of its own laboratory work, This work, however, for the most part relates to the domain of applied science, as distinguished from pure science research. We recognize that if the industries with which we are concerned are to develop the work of pure science, research must continue and be supported by those who profit from its results, and our contribution is based on this sense of responsibility."

Affiliated Association Activities

Canadian Gas Association

P. V. Byrnes

THE twentieth annual convention of the Canadian Gas Association opened in the beautiful quarters of the Royal Canadian Yacht Club in Toronto on June 16 with President J. J. Armstrong in the chair. The well attended convention was characterized by splendid original papers chiefly on technical subjects.

Mr. Armstrong in his Presidential address said: "The gas industry in Canada is in a flourishing condition and I am sure I voice the opinion of most of us when I say that the industry has never faced a future of more promise. The industrial field offers practically limitless opportunities for the use of our product; at the same time, in the domestic field, house heating offers possibilities which cannot be estimated.

"The sale of gas in Canada has increased 350 per cent during the twenty years that have elapsed since this Association came into being. In the year 1926 the output of manufactured gas amounted to over 14 billion cu.ft., whereas in 1906 it totaled but three billion cu.ft.

"This showing is all the more remarkable when we stop to consider the tremendous development that has taken place in the use of electricity during the same period, and the fact that Canadians are the most lavish users of electricity of any people in the world; the yearly consumption of electricity in Canada being approximately 1000 kilowatt hours per person, or double the per capita consumption in the United States."

In a paper on "Low Temperature Carbonization" R. L. Brown, chief engineer, low-temperature carbonization department, International Combustion Engineering Corporation, New York, N. Y., described the McEwen-Runge plant of the Milwaukee Electric Railway and Light Company and the K. S. G. process as used in a plant at Essen, Germany.

A. M. Beebee, superintendent gas manufacturing department, Rochester Gas & Electric Corporation, Rochester, N. Y., described the operation and results obtained in dry quenching of coke in a plant of the Sulzer type installed in Rochester, the first installation of its kind in the United States. His paper very interestingly and completely covered the advantages and disadvantages of the dry quenching of coke by this process.

A report of a committee to suggest ways and means of cooperating with the Appliance Testing Laboratory of the American Gas Association toward the testing and approval of Canadian appliances was received and accepted. This report included the acceptance of a working agreement to be submitted to the American Gas Association. Director R. M. Conner described the purposes, accomplishments and future of the Laboratory.

Immediately following adjournment of the session a delightful luncheon was served in the Club at which the Mayor of Toronto welcomed the visitors and extended the freedom of the city. The afternoon was devoted to an inspection trip of the plants of the Consumers Gas Company.

In the evening the annual banquet of the Association was held in the King Edward Hotel at which Past President Arthur Hewitt presided as toastmaster in a manner which made the occcasion a delight and an event which will be remembered. During the evening, the greetings of the American Gas Association were extended by its secretary, K. R. Boyes, and a few remarks about the first meeting of the Canadian Gas Association were made by A. Gordon King, a charter member and now service engineer of the A. G. A.

The session held on June 17 was held in the auditorium of the Consumers Gas Company. A paper by C. O. Condrup of the Woodall-Duckham Companies, London, England, very completely describing the distillation of gas by means of the T. I. C. (lead bath) process was read. R. J. Percival of the Consumers Gas Company of Toronto presented a paper on "House Heating with Manufactured Gas in Canada" in the course of which he stated: "In every city in Canada there is a big undeveloped territory to work in for gas house heating, and it is imperative that we should proceed in a scientific and aggressive manner in order to secure this business."

A paper was presented which described the distribution system of the Public Service Company of New Jersey by Harry Ellis, assistant general superintendent of distribution. "The Removal of Naphthalene and Gum-Forming Constituents from Gas" was the subject of an excellent paper by A. R. Powell and J. F. Byrnes of the Koppers Construction Company and M. Merritt of the Western Gas Construction Company. A paper, "Surplus

Heat Utilization Possibilities in Canadian Coal Gas Plants," by W. C. Philpott, chemist, Consumers Gas Company, very completely reviewed the subject of heat losses occurring in coal carbonization and described what is being accomplished in heat recovery. The program concluded with the reading of a paper, "The Drying and Further Purification of Town's Gas," by W. C. Holmes of the West Gas Improvement Company, New York, N. Y.

The report of the Nominating Committee was unanimously accepted, electing the following officers: President, P. V. Byrnes, United Gas & Fuel Company, Ltd., Hamilton; first vice-president, F. Elcock, Ottawa Gas & Electric Company, Ottawa; second vice-president, K. L. Dawson, Nova Scotia Tramways & Power Company, Halifax, and secretary-treasurer, G. W. Allen, Toronto. The present members of the Executive Committee were reelected and D. R. Street added to it.

The convention was voted most successful and President Armstrong and Secretary Allen were commended for their untiring efforts in making the arrangements.

Indiana Public Utility Association

I. C. Shepard

THE annual meeting of this association was held at French Lick, Ind., May 19, 20, and 21. The program for the Gas Section included many interesting and significant papers on important developments, including public relations, water heating, Blue Star Plan, etc.

The new officers elected are as follows: President, I. C. Shepard, Terre Haute; vice-president, T. J. Kelley, Fort Wayne; secretary-treasurer, F. B. Tracy. The directors are: T. J. Spragle, Seymour; E. L. Donovan, Logansport; F. W. Sargent, Indianapolis; B. H. Gardner, Hammond, and V. W. Kennedy, Terre Haute.

Rapid progress is to be made by the gas industry in Indiana during the next few years, according to the newly elected president, I. C. Shepard.

"Most of the companies in the state have made their surveys or partial surveys of the industrial possibilities and have revised their rates so that the industrial field can be developed," says Mr. Shepard. "The companies have also realized the possibilities of increasing their output by the sale of gas water heaters and are now working this field intensively.

"The question of house heating seems to be well settled in the minds of most gas men. A great many companies are preparing to take on this load, which will probably vary in the different localities according to the efforts put forth to develop the field. At the annual meeting much enthusiasm was displayed over the possibilities of increased sales."

Pacific Coast Gas Association

THE annual meeting of the Pacific Coast Gas Association will be held at Santa Cruz, Calif., Sept. 12 to 16, with headquarters at the Hotel Casa del Rey, according to announcement of Clifford Johnstone, executive secretary.

New Water Heating Booklet

UNDER the title, "The Service Behind the Faucet," the New York Regional Sales Council has prepared an interesting and well-written booklet of 16 pages on hot water service.

Sample copies may be had from the Editor of the MONTHLY. The price is $75 a thousand, with suitable imprinting.

The companies enrolled in this Conference are: Consolidated Gas Co. of N. Y., Brooklyn Union Gas Co., Brooklyn Borough Gas Co., Kings County Lighting Co., N. Y. & Richmond Gas Co., Public Service Electric and Gas Co., N. J., Westchester Lighting Co., and Bronx Gas & Electric Co.

ACCOUNTING SECTION
A. L. TOSSELL, Chairman EDWARD PORTER, Vice-Chairman
H. W. HARTMAN, Secretary

How Advanced Are Our Sales Methods?

A Plan for Closer Cooperation Between the Accounting and Commercial Departments

By CHARLES D. SCHAFFER
General Service Dept., Consolidated Gas, Electric Light and Power Co., of Baltimore, Md.

THE suggestions in this article concern both the commercial and accounting departments of utilities. Mr. Schaffer has outlined a plan that means cooperation between these two departments, with an opportunity for increasing the sales of the commodities the utility has for sale.

Reference to a suggested plan for dealing with the saturation of electric lines has been abstracted from the article.

Mr. Schaffer's company considered his suggestion so valuable that they awarded him $50.—Editor.

UPON observing the methods of the company in quoting prospective customers the cost of extending our lines or mains, one is impressed at times with the apparent lack of sales viewpoint and sales effort.

The time required to quote prospective customers is somewhat excessive and the letter quoting the customer is not prepared from a sales viewpoint.

A great field for merchandise sales exists in the prompt follow-up of new accounts and where customers move from one address to another. We have knowledge, through our application and billing departments, when a new meter is installed and when a customer moves from one address to another. Therefore, the following will be discussed in order:

1. Sales viewpoint in quoting cost of gas and electric extensions.
2. Sales follow-up of new customers.

SALES VIEWPOINT IN QUOTING COST OF GAS AND ELECTRIC EXTENSIONS

The progressive business house in its efforts to obtain new business places special emphasis upon the following:

1. Estimates must be furnished the customer promptly.
2. An offer must accompany the estimate to do the work promptly after receipt of order from customer.
3. The letter furnishing the estimate must be written from a sales viewpoint —in fact, be a sales letter.
4. Special sales literature must accompany the estimate — setting forth all the advantages and comforts—in order to create in the prospect a desire to buy.
5. Personal visit made if estimate does not bring results.

In applying the above principles to our present practice of quoting gas and electric extensions we find:

1. An analysis has been made which shows the time required to quote prospective customers on gas and electric extensions, from date of prospect's request to date quotation is made. It is suggested that an effort be made to reduce the present total average time to six working days. This may be done by having the estimate made up more promptly. The analyses show the numerous steps and the length of time required for each operation. While it may be true that no particular activity requires any great length of time, yet on the other hand the prospective customer feels the cumulative total of all these operations.

2. In quoting a prospective customer on an electric extension, our form letter makes no mention as to when work will be completed after deposit is paid. Should not our practice in quoting gas and electric extensions be uniform in this respect?

3. It is suggested that the last paragraph of letters quoting customers, excepting those to builders, etc., read as follows:

"We thank you for this opportunity as it is our earnest desire that you enjoy the many comforts and conveniences of (gas) (electricity) (gas and electricity). Therefore, we will appreciate hearing from you promptly, so that you may enjoy these conveniences without delay."

The prospect can be informed in the first or second paragraph that the money is payable in advance.

In our letter to builders, etc., the suggested paragraph can be substituted by a statement urging that the deposit be paid promptly so that there will be no delay in installing the service.

However, in those cases where there is no cost of extending our gas mains or electric lines and *where the prospect cannot be reached by phone,* it is suggested that a salesman of the merchandise department call to secure the prospect's meter application. This practice will give the merchandise department an opportunity to sell merchandise and at the same time it will save the prospect the trouble of communicating with our office to make application for the meter.

4. No special literature accompanies our estimate. Thus, if there is a deposit to be made, there is nothing to remind the customer of the numerous comforts or conveniences of gas or electricity. In other words, the customer is informed of the cost, but is not reminded of the comforts and conveniences that will be brought to his home with the outlay of this money.

Therefore, it is suggested that the booklet "Electricity in Your Home" be enclosed with every letter in which we quote a prospective customer the cost of extending our electric lines to his home.

It is also suggested that a similar booklet be prepared showing the comforts of gas, low costs, and various gas appliances that can be used in the home. If such a booklet is prepared, it will serve as a stimulant for gas sales and new gas installations. It will also be of service in introducing the correct uses of gas in the home. An appropriate title for the booklet would be "Gas in Your Home." It is further suggested that this booklet accompany each letter, quoting a prospective customer the cost of extending our gas mains and service connections to his premises. If we quote a customer on both gas and electric extensions, then both the gas and electric booklets should be enclosed with our letter.

5. A salesman does not call to interview a prospect after a quotation has been made and the prospect has not responded. Only in those cases where it is possible to supply several houses does a salesman canvass the prospects. Where but one house is involved, we quote a prospect, either by phone or letter, the cost to extend our gas and electric mains. If we do not hear from the prospect within several weeks, we phone, or write a second or follow-up letter. However, the second phone call and follow-up letter are not very effective. Therefore, it is suggested that we quote a prospect the first time either by phone or letter, as at present. If within two weeks we get no response, refer the estimate to a salesman of the merchandise department to interview the prospect, with a view of "selling" him on the comforts and conveniences of gas and electricity and obtaining the necessary deposit. This will also open the way for the salesman to sell some appliances if he can secure the prospect's consent to become a customer. Consequently, in accordance with the above suggestion, the second phone call and follow-up letter would be abolished and the personal call of the salesman would take its place.

(Continued on page 444)

PUBLICITY AND ADVERTISING SECTION
HARLOW C. CLARK, Chairman E. FRANK GARDINER, Vice-Chairman
CHARLES W. PERSON, Secretary

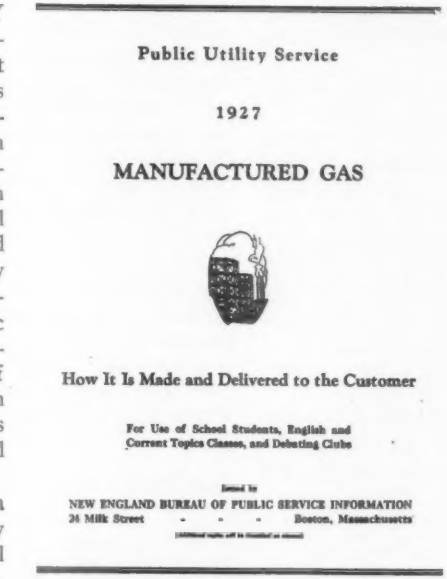
That Those Who Learn May Learn of Utilities

Four Pamphlets Especially Prepared for Use in Schools Are Doing Valuable Work

PROBABLY the most recent development in educational lines by utility companies has been the rapid advancement of work with schools and school children. Started four years ago by the Illinois Committee on Public Utility Information, this phase of publicity has grown until now it has assumed national proportions.

Last winter a concerted move by the three national utility associations, the National Electric Light Association, the American Electric Railway Association, and the American Gas Association, resulted in the preparation and publishing of four official pamphlets on gas, electricity, telephone, and street railways, especially designed for use in schools, both public and parochial. One hundred thousand of these pamphlets have been distributed to date. Further orders have been received, making a second printing of more than 300,000 necessary. These totals include the four pamphlets.

There is no doubt as to the value of this work, according to Samuel T. MacQuarrie, director of the New England Bureau of Public Service Information, Boston, Mass., who to date has distributed 76,000 copies of the four pamphlets, and has placed an additional order for 100,000 for use during the next school term which opens in September.


Public Utility Service

1927

MANUFACTURED GAS

How It Is Made and Delivered to the Customer

For Use of School Students, English and Current Topics Classes, and Debating Clubs

Issued by
NEW ENGLAND BUREAU OF PUBLIC SERVICE INFORMATION
24 Milk Street - - - Boston, Massachusetts

The four pamphlets on gas, electricity, telephone, and street railways, are printed in the same form as shown above

Mr. MacQuarrie reports that in the five New England states his committee serves, there are approximately 900 high schools, including public, parochial, and private preparatory institutions. To date requests for pamphlets have been received from more than 300 of the schools, entirely exhausting the supply of 76,000 originally ordered and making it necessary to place the second order of 100,000 for use next Fall.

"About the first of April we addressed a circular letter to the principal of each of the 900 schools, enclosing a copy of each of the four pamphlets," says Mr. MacQuarrie. "We told them that we would be very glad to furnish free of charge as many copies as they could use.

"We also sent copies of these pamphlets to all the libraries in our district,

and a second letter to the schools that did not reply to our first letter."

Copies of the booklets were also sent to the utility companies in the section.

"In the letters to the companies," Mr. MacQuarrie continues, "we asked their cooperation in presenting the pamphlets to the principals of the local high school. This resulted in a number of requests being received from the companies, they in turn presenting the pamphlets to the schools with their compliments. This aided their contact locally.

"Several companies also distributed the pamphlets to their own employees.

"We have ordered 25,000 each of the four pamphlets for distribution in the Fall, but I do not think that this number will be sufficient to care for the requests. We intend to reach as many of the 600 remaining schools as possible, and there is every indication that many of the 300 odd schools requesting them last year will want additional copies. There is no doubt in my mind as to the value of this work."

Most of the requests received by Mr. MacQuarrie were for identical quantities of the four pamphlets, although in a few cases some schools did not want a particular booklet, probably because of the lack of that utility service in the community.

More than 62,000 of the 76,000 copies originally ordered were requested by schools.

The following letters received by the New England Bureau testify to the value of the pamphlets:

"I find these pamphlets very interesting and instructive and feel sure that they will do a great deal of good as it is difficult to find these subjects so interestingly and adequately described in any available school text book. Appreciative credit should be extended to you for this work."—East Brownfield, Maine.

"These pamphlets are just what I need in my course in Problems of Democracy. My students have had considerable difficulty in finding such material."—Portland, Maine.

"Thank you for forwarding the four pamphlets describing the electric light and power, manufactured gas, street railway and telephone industries. I became so interested in reading them that I dropped all my other work to complete the four of them at one sitting."—Lebanon, N. H.

"The information contained in these pamphlets is most interesting and useful . . . these copies will be distributed to our high school pupils who will be greatly benefitted by them."—Pawtucket, R. I.

Those companies interested in this valuable work are urgently requested to communicate with the Publicity and Advertising Section of the American Gas Association as soon as possible. More than 300,000 copies of the four pamphlets are being printed at the present time, and an additional printing may be necessary before August 1. The price quoted is $13.75 a thousand, for each of the pamphlets.

The A. G. A. is handling the printing and distribution of these official pamphlets, in order to effect certain economies in printing and to insure prompt deliveries, etc.

Sample copies of each of the pamphlets will be sent to those requesting them.

Additional Exhibitors Listed for Chicago Show

SINCE publication in the June issue of the MONTHLY of the list of manufacturers taking space at the Ninth Annual Exhibition of the A. G. A. to be held at the Stevens Hotel, Chicago, Ill., October 10-14, the following have applied for booths:

Chas. A. Hones, Inc.
Utilities Publication Co.
American Gas Furnace Company
Co-Operative Foundry Company
The Superior Manufacturing Company
Public Service Production Company
Malleable Iron Range Company
Leeds & Northrop Company
Maxon Premix Burner Co.
Public Service Stock & Bond Company
The Detroit Vapor Stove Co.
Logan County Coal Corp.
The Cleveland Trencher Co.
The C. M. Kemp Mfg. Co.
Merco-Nordstrom Valve Co.
Felt & Tarrant Mfg. Co.
Underwood Typewriter Co., Inc.
Jamestown Metal Desk Co.
Richmond Radiator Co.

MANUFACTURERS SECTION
W. E. STEINWEDELL, Chairman H. L. WHITELAW, Vice-Chairman
C. W. BERGHORN, Secretary

Cuba is a Fertile Export Field

Says Trade Commissioner Mervin L. Bohan, Havana, Reporting to the Bureau of Foreign and Domestic Commerce on the Cuban Market for American Gas Appliances

AT the present time Cuba is importing slightly in excess of four thousand domestic gas appliances each year. Reliable and authoritative estimates are to the effect that during the coming twelve months one thousand more gas stoves and ranges will be imported than in 1926, and that the demand will have increased by one thousand five hundred in 1928.

Cuba has consistently ranked second among the export markets of the American manufacturer of gas stoves, ranges and water heaters. During the four-year period 1922-25, the Island purchased 15,590 of these appliances, valued at $325,512. But while the total exports of the United States were 205 per cent greater in 1925 than in 1922 the increase, in so far as Cuba was concerned, was only 95 per cent. As will be seen from the following statistics, Cuba imported practically the same number of gas appliances in 1925, 1924 and 1923. In 1922 Cuba took 18 per cent of all the gas stoves, ranges and water heaters exported from the United States; in 1923 the share was increased to 22 per cent; in 1924 the percentage had dropped back to that of 1922; and by 1925 it had fallen to 13 per cent.

To speak of the Cuban market for gas appliances is to speak of Habana. Probably 95 per cent of all such commodities imported are used within a rather limited section of the city. Previous to the entrance of electricity into the lighting field, gas plants were in operation in all the principal cities of Cuba. Today, however, the only plant manufacturing gas is located at Habana. There is a concern in Matansas, east of Habana, which manufactures blue gas from gas oil and distributes it in containers throughout the interior.

In Habana there are at the present writing, approximately 18,000 gas installations, 94 per cent domestic and 6 per cent commercial. The firms are selling gas equipment and fourteen brands of American stoves and ranges are represented. There is no foreign competition at this time.

PLANS FOR EXPANSION

The Havana Electric Railway, Light & Power Company has a modern gas plant situated on the south shore of the Habana Harbor. Water gas is manufactured.

As a result of a very exhaustive survey completed on September 30, 1926,

EXPORTS OF GAS STOVES, RANGES AND WATER HEATERS

	Number		*Value*		
Year	*Total Exp. from U.S.A.*	*Exp. to Cuba*	*Total Exp. from U.S.A.*	*Exp. to Cuba*	*Percentage**
1922	12,716	2,232	$235,302	$44,332	18%
1923	20,229	4,545	418,167	94,461	22%
1924	24,605	4,444	517,997	94,246	18%
1925	32,621	4,369	718,670	92,473	13%
	90,171	15,590	$1,890,136	$325,512	71%

*Based on number. Percentages based on value are almost identically the same.

the company has adopted new policies in regard to the extension of its services. This survey brought the following pertinent facts to light.

1. That the 191 miles of gas mains now in service cover only a small portion of the area of the city.
2. That 63 per cent of all premises now on gas mains are not using gas.
3. That 65 per cent of the commercial establishments that can use gas in some of their operations and are on the present mains are not utilizing it.
4. That existing mains represent only 5/10 of a mile per 1000 inhabitants, about 1/4 the customary mileage in the United States.
5. That the ratio of electric meters to gas meters is 3.2 to 1 as against a ratio of 1 to 1 in many cities of the United States (56,188 electric meters and 17,637 gas meters—as of September 30, 1926).
6. That while the daily production capacity of the gas plant is 9,000,000 cu.ft., the load factor is only 36½ per cent. The load factor of the distribution system is even lower—27½ per cent.
7. That the principal fuel competition in the commercial field is coal; in the domestic, charcoal.

The investigation also brought out that the majority of the present commercial and industrial business was of an auxiliary or light duty nature, that the advantages of gas were not well enough understood by the majority of the contractors and builders, and that the people of the city were not adverse to or fearful of its use.

The company has established a new policy and will thoroughly test it out in an endeavor to increase materially their gas business. This policy may be summarized roughly as follows: The company will lay mains and extend laterals ten feet within property lines at no cost to the customer; a revised rate for industrial and commercial users will provide for a sliding scale; a strong campaign to enlist the interest and cooperation of the construction industry will be carried out and an educational campaign designed to acquaint the people with the benefits and advantages of gas will be run in the newspapers. The gas company is opening a modern store on one of the principal streets to stimulate sales.

This policy has already greatly increased the possibilities for the sale of stoves and water heaters. On present mains there are approximately 46,000 domestic premises, of which only 17,000 are using gas. These 17,000 Cuban homes are all equipped with some type of gas stove but the estimated number of gas water heaters installed is only slightly in excess of 4000. Consequently there are 29,000 possible prospects for gas stoves and more than 40,000 for water heaters, 13,000 of which now have gas installed. To these prospects may be added several thousand more that will be reached by the new main extensions being undertaken by the company. The main factor, now that the major cost of gas installations has been removed from the customers' shoulders to those of the gas company, would seem to be intelligent and intensive sales work.

STOVES PREFERRED IN CUBA

The most popular stoves, as judged by sales, are the four-burner type with the oven underneath. The same stove but with three burners is a very close second. Stoves without ovens and hot plates find a very ready sale, and in general it may be said that the lower priced models are the ones in greatest demand. Ranges, four burners with oven alongside, have a rather wide sale and the larger stoves and ranges are in demand by the wealthier trade. Many apartment buildings are being constructed or have lately been finished in Habana, and the majority of these are in the section served by gas. In some months, according to estimates of local dealers, as many as 250 gas-cooking units have been sold for installation in these new structures.

The non-automatic tank water heater is most in demand at the present time, although the automatic storage tank heater and the instantaneous coil type are also

being sold. The ratio of sales is roughly five to one.

In the districts not served with gas the gasoline stove is very popular. It is estimated that there are five thousand of these installations. In many instances the regular gas stoves are equipped for use with gasoline, the burners being changed and the gasoline tank attached.

Other gas appliances are on the local market and are being sold on a small scale, but the intensive sales work usually noticeable in American cities is absent here.

An analysis of the sales of one of the most important companies selling gas appliances in the City of Habana discloses that 78 per cent of their sales are cooking stoves; 14 per cent water heaters and eight per cent other gas equipment. On the basis of one thousand units, their sales last year were as follows:

Ranges	355
Cookers	219
Hot plates	198
Tank heaters, not automatic	113
Automatic heaters, tank and coil	23
Toasters	16
Hotel ranges	7
Laundry stoves	3
Miscellaneous appliances	66
	1000

COMPETITION AND TERMS

The American gas stove manufacturer desiring to enter this market will find much competition from other American manufacturers but none from Europe. Only one foreign water heater has any sale locally and its competition is not a serious factor. The main competition comes from other fuels, such as charcoal, coal, oil and gasoline.

The partial payment plan is not being employed locally for the sale of gas appliances. One company does allow stoves to be purchased on four monthly installments, at a mark-up of ten per cent on the cash price. In some instances other firms will allow individuals of good credit to pay for gas installations in two or three equal payments.

The possible expansion of sales and prospects for gas-equipped appliances are as bright in the industrial and commercial fields as in the domestic. At the present time there are 1060 concerns using gas, although as previously pointed out, mostly for auxiliary or light-duty work. On gas mains, but not connected, there are 1549 firms which are in a position to use gas to advantage, and 402 additional prospects that are not now on the mains but are near enough for connection. The stimulus of the revised rates for large consumers should greatly increase the use of gas both by present users and potential customers. Probably one of the most necessary factors to be considered by American manufacturers of gas-equipped appliances is that of intensive and educational sales work.

For example: There are 55 bakeries using gas, but 40 which are not; 70 foodstuffs manufacturers are connected, but 154 are not; 94 laundries are using gas, against 166 who are on mains but do not employ it.

The Local Market Survey

(Continued from page 410)

ered attainable with the application of reasonable sales effort.

In the domestic or residential survey, a census was taken of the different gas appliances known to be in use and the percentage of saturation figured for each important appliance and for the whole gas consumption in the territory as a whole and in the several divisions of the territory. The estimate of the future gas consumption was then arrived at by prolonging the trend curve, taking into account the estimated growth in population (as indicated by past growth) and the difference in gas rates in different sections of the territory.

The estimate of the domestic market for gas is admittedly less accurate than that of the industrial and commercial market, but is far more reliable than the

opinions or guesses of any one individual, and since it is free from biasing influences, it is a safer guide to the activities of the sales department than their usual estimates of what they expect to accomplish. One beauty of it is that even though not accurate, it can be made to come true by increase of human effort. True of any quota, but fixing quotas by guesswork is dangerous. The salesman may relax if he feels quota is merely the method of stimulating.

The value of any marketing survey lies largely in substituting fact for opinion as a basis for plans. It serves as a guide to the production department in enabling them to provide facilities adequate for future requirements; it guides the sales department by setting up a quota that can reasonably be attained without the necessity of costly, high-pressure methods; it provides for the direction of the available man-power in the sales department into channels where their efforts will be most productive.

When the survey is made by a combined company offering both electricity and gas and covers both fields, it may have interesting by-products. It may show, for instance, that the employment of salesmen to convert gas users into users of electricity is simply wasted effort because the added revenue that could be secured might not be sufficient to pay the selling costs. It may also indicate what lines of activity will meet with least sales resistance, and although it is not an invariable rule, it generally happens that marketing efforts can be conducted most profitably along the lines of least resistance.

I hope the time will come when every company supplying either electric current or gas or both will have as clear and definite a bird's-eye picture of its present business and its future potentials as the Central Hudson has now obtained.

In Memoriam

John M. Dell, St. Louis, Mo.

Increasing Apartment Revenue

(Continued from page 398)

Due to the fact that the wholesale rate is based on sale of gas through a demand limiting meter, the diversity factor in this large building will be greater than in any example which we could point out at present, and the average cost per 1000 cu.ft. will be less, which of course, means that the cost to the owners per apartment will be smaller than any of the examples we have given.

In addition to the increased revenues secured by the company, the following benefits are noted when the master-meter idea is adopted:

Investment, maintenance, depreciation, meter changing, meter reading, and meter billing costs are saved on the additional meters.

Expenses incidental to the opening and closing of accounts with many incoming and outgoing individual consumers are saved, such as credit rating investigations, turn-off and turn-on orders, final bill rendering, collection expenses, and meter setting and removing.

Higher standards of illumination and domestic gas utilization which result from free gas and electricity" encourage other consumers in a community to more liberal utilization.

Better public relations ensue when all of the petty negotiations over credit ratings, meter readings, and collections are eliminated, and when these consumers realize that the company is granting the landlord such low wholesale rates as to make possible "free gas and electricity."

Builders of future apartment houses can be encouraged through such successful examples to save approximately $5000 of extra costs for piping and wiring each apartment for an individual meter. The sum thus saved can be diverted to the purchase of equipment such as gas-fired water heating boilers, house heating equipment, refrigerators, etc.

INDUSTRIAL GAS SECTION
H. O. LOEBELL, Chairman F. C. MACKEY, Vice-Chairman
C. W. BERGHORN, Secretary

New U. G. I. Kitchen Is Model Establishment

Not Only Serves Restaurant, But Is Also Used as Display of Hotel and Kitchen Equipment

By H. S. CHRISTMAN
Assistant Commercial Agent, Philadelphia Gas Works

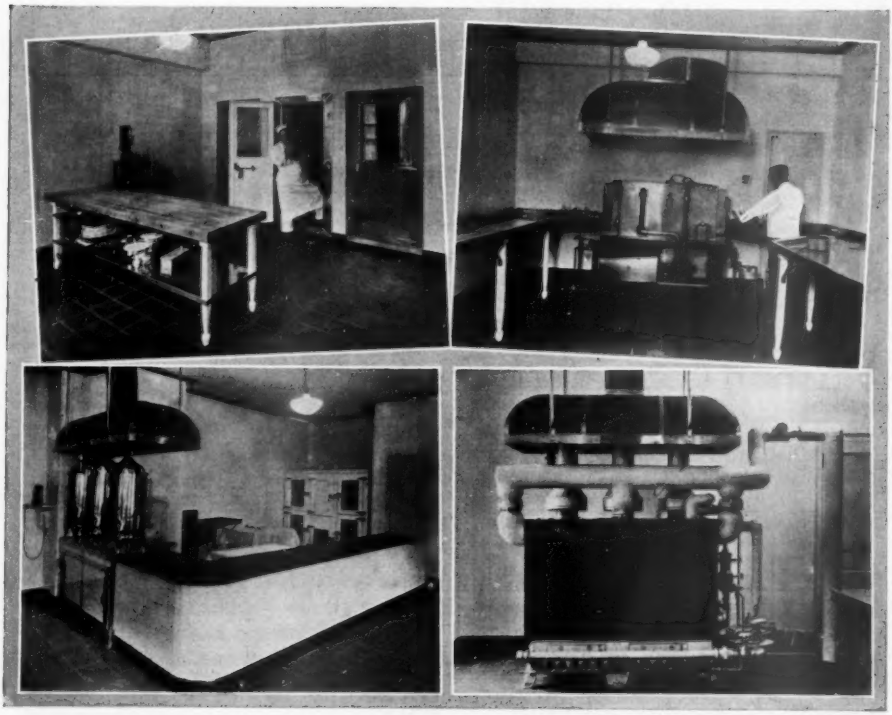
INCLUDED in the plans for remodeling the U. G. I. Building at Broad and Arch Streets, Philadelphia, and the erection of a new wing were provisions for the installation of a model all-gas kitchen on the 12th floor, to be used not only to serve the restaurant in the building but also to display gas hotel and institution kitchen equipment.

Building construction is now complete, with the exception of minor interior details, and the kitchen is in operation, regularly serving the restaurant and visited by prospective purchasers of gas equipment.

No expense has been spared in making the installation the last word in modern kitchen construction. The floor plan and layout of apparatus is such that supplies enter at one end and pass out as prepared meals at the other end. Interior finish has been developed to insure absolute sanitation, with floors of dull red and walls of gleaming white tile.

Much thought has been given to ventilation. By means of an electrically driven

View of the newest and best kitchen in Philadelphia—in U. G. I. Building



No effort was spared to make the U. G. I kitchen complete in every detail

60-inch exhaust blower a complete change of air every 75 seconds is obtained. All cooking and dish washing fixtures are provided with blued steel hoods, trimmed in nickel steel. These hoods are connected to the exhaust blower by blue steel ducts. The ventilation is so successful that the kitchen may be operated at full capacity without the presence of smoke, steam or odor.

The establishment is divided into four sections, each section so located and operated that all confusion is eliminated, even during maximum activity.

PREPARING SECTION

This section consists of three rooms—receiving room, store room and work room—adjacent to one end of the main kitchen. Here all foods are received from the vendors, stored and prepared for cooking.

COOKING SECTION

This is the kitchen proper. The most unusual piece of equipment found here is a 15-section gas-fired boiler, operated at 15 pounds pressure, which provides all the steam used in the establishment. Thus located, it is a most effective demonstrator for kitchen equipment buyers, always bringing from them enthusiastic comments on the cleanliness and dependability of gas for fuel.

The gas-cooking equipment, in addition to the boiler, consists of five sections of hotel ranges, a broiler and a baking oven. The steam cooking equipment, all using steam from the boiler, consists of a 40-gallon soup stock kettle, a three-com-

(Continued on page 444)

COMMERCIAL SECTION
J. J. BURNS, Chairman G. M. KARSHNER, Vice-Chairman
J. W. WEST, Jr., Secretary

N. E. Sales Conference Takes Up Methods of Building the Domestic Load

THE Third New England Regional Sales Conference, held at the Hotel Mohican, New London, Conn., June 3 and 4, was a complete success, according to the consensus of opinion of the 300 gas men who attended. This conference again proved the popularity of the conference idea among the gas men, and all were enthusiastic about the results.

William Gould was chairman of the committee in charge of the conference and V. E. Bird and A. L. Kebbe, general manager and sales manager respectively of the Connecticut Power Co., of New London, cooperated in every way in making possible the successful meeting in their city.

The program was divided into three sections, as follows: On Friday afternoon water heating was the topic, on Friday evening house heating was considered, and on Saturday miscellaneous commercial topics filled the day.

A. L. Kebbe's paper on water heating opened the conference. Mr. Kebbe considered the subject from every angle, and opened the way for a discussion that brought out many important and salient points. The problem was attacked from the standpoint of what sales methods have proved successful in the merchandising of hot water service. He told of plumber cooperation, and of the plan for the plumbers for the cooperative advertising.

J. H. Sumner, Cambridge, Mass., outlined the activities of his company, and stressed the importance of employee cooperation, whether the employee be the president or the meter reader. This method of sales stimulation has proved very successful. A small commission is paid to the employee making the sale.

E. B. Flaherty, Fitchburg, Mass., considered the question of plumber cooperation, and explained his experiences with the architects and contractors.

H. B. Hall, East Braintree, Mass., also considered plumber cooperation, and the plan he has found successful is different from that used by Mr. Kebbe. Mr. Hall gives part of the advertising free, but for this requires that each plumber so advertised shall purchase from the gas company three automatic water heaters for resale.

W. A. Wright, Boston, Mass., outlined in detail the system in use by the Consolidated Gas Company of Boston, whereby every salesman is a water heater salesman. A bonus system has been arranged that makes it especially desirable for the salesmen to sell their quotas of required appliances. In sales talks the service of adequate and immediate hot water service is stressed.

The subject of selling water heaters apparently was of great interest to the New England gas men, for the informal discussion brought out some exceptionally pertinent information.

A dinner was served to the members in the evening, and this was followed by a cabaret.

The evening session opened with an address by V. E. Bird on the value of the house heating load from the executive's viewpoint. Engineering, rates, and sales were the subjects stressed by Mr. Bird.

L. A. Keen, Haverhill, Mass., W. H. Bradley, Springfield, Mass., and J. W.

Clark, Stamford, Conn., took part in the discussion and brought up many valuable ideas.

R. A. Gordon, Pawtucket, R. I., covered the subject of auxiliary heating. He considered methods of selling space heaters for both the home and the garage.

The Saturday session opened with a paper by Archibald M. Crossley, of Crossley, Inc., who has just completed the customer survey for the American Gas Association. The important trends established by the survey were explained to the conference in a non-statistical manner.

This survey is now in the hands of the Association committee to consider national advertising. This committee will undoubtedly make a report of the major findings of the survey and recommend a plan of action for the industry at an early date. Early issues of the MONTHLY will contain later information on this.

Mrs. Elizabeth Macdonald, Boston University, Mass., talked on the subject of home service. Her major points were to do the home service job well and that the department should be of service both to the sales department and to the customer.

"Selling the Seller," proved to be an especially interesting skit on the development of the gas refrigerator. G. W. Keller, New Haven, Conn., was the refrigerator company salesman, and Jesse L. Johnson, Providence, R. I., was the gas company sales manager. The skit was very well received by the conference, the humor being of the sort that was funny as well as pungent.

M. B. Webber, governor of the Gas Sales Divisions of the N. E. Gas Association, reported for the Regional Commercial Policy Committee, in place of H. C. Crafts, chairman. The report brought up the need for the following: Cooperative merchandising, equitable rates, better interpretation of rates for the customer and the company, the adoption of the district representative plan or something similar for increasing sales and bettering public relations.

Mohonk Conference

(Continued from page 424)

appliance will give the gas companies another form of weapon with which to wage war against the forces tending to decrease the domestic load.

Robert Wall, inspirational speaker, closed the last session.

One of the most interesting features of the Mohonk conferences has been the round table discussions in the evening. Two papers that had been left over from the morning sessions were presented at these round table discussions, but these by E. R. Acker and A. W. Humm, on salesmen's compensation and training domestic salesmen, respectively, were the only formal papers given. The discussion was very active because of the informal nature of the meetings, and it was the consensus of opinion that the informality of these meetings supplements in an excellent manner the formal presentations at the morning sessions.

The entertainment at Mohonk was attractive this year, despite the inclement weather. *The Daily Honk,* while not listed on the formal entertainment program, doubtless caused more real happy moments than some of the other sports.

THE United Gas Improvement Company has obtained, subject to formal approval of the stockholders, a controlling interest in Day and Zimmermann, Inc., 1600 Walnut Street, Philadelphia. The firm is interested in and operates public utility properties in 14 states, serving approximately 935 communities, with a population of 2,369,000 persons. Gross earnings of the larger properties under Day and Zimmermann management approximated $34,000,000 last year.

A statement issued by Arthur W. Thompson, president of The United Gas Improvement Company, says the transaction is in line with the U. G. I. policy to extend its activities in coordinated public utility management, engineering and construction, as well as to acquire financial interest in such properties as may offer opportunities for consolidations and development of benefit to the public and investors.

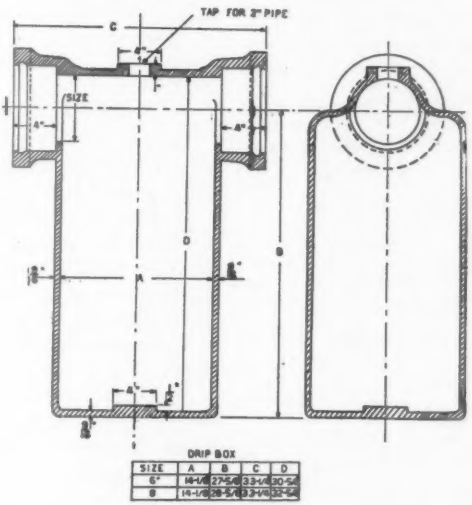
TECHNICAL SECTION
WALTER C. BECKJORD, Chairman HARRY E. BATES, Vice-Chairman
H. W. HARTMAN, Secretary

Suggested Change in Drip Pot Design

A Matter of Vital Interest to all Distribution Superintendents Who Are A. G. A. Members

By WALTON FORSTALL
Chairman, Committee on Cast Iron Pipe Standards

IN April, the Minneapolis Gas Light Company suggested that drip pot as illustrated herewith be substituted for the "Line Drips" as illustrated on pages 24 and 26 of the "Standard Specifications for Cast Iron Pipe and Special Castings."



This suggestion was forwarded to the members of the Committee on Cast Iron Pipe Standards and the following replies have been received.

From N. F. S. Russell: "I submitted these designs to our vice-president in charge of operations, D. P. Hopkins, and to our chief engineer, T. P. Anthony, who agree that this style of drip pot can be made at a less cost than the present A. G. A. drip, and we think that it would be just as satisfactory. In fact, it might show some considerable advantage to the gas man inasmuch as our chief engineer instanced the fact that some months ago, at Malden, Mass., he witnessed an air test on a line, and the gas company were complaining of the standard drip pots leaking by reason of the load on the top plug.

"We would therefore recommend the suggested change asking that the present body diameters and capacities be preserved. We make this request in that these drips would be made on the side whereas the present drips are made on end, and by preserving the present body diameters and capacities it would not necessitate entirely new equipment."

From C. C. Simpson, Jr.: "Fittings of this character were used some years ago in New York, but were discarded. Some of the reasons for discarding them were as follows:

"There were cases where the suction pipe rusted out and dropped into the pot, making repairs difficult, if not impossible.

"There were also cases where the pot became clogged with solids or semi-solids and could not be cleared without removing the casting from the line.

"It is believed that there would be considerable objection to this type of box on the part of the pipe foundries, as

there would be difficulty in withdrawing the core."

From H. T. Hirst: "Our objection to this style of pot would be that if there should be any accumulation of dirt or rust, it would be difficult to clean."

From N. F. S. Russell (second communication): "I believe that Mr. Simpson and Mr. Hirst present valid objections which had not occurred to me.

"Judging from the letter of the Minneapolis Gas Light Company, these drips are only used in the smaller diameter lines, and it might be worthy of thought to show both styles of drips, both open and closed top, with the same general diameters and capacities."

The committee would like further expressions of opinion of distribution men before coming to any conclusions.

Sales Methods

(Continued from page 432)

A great field of new business lies in brand new houses and in those cases where a customer moves from one address to another.

A customer who moves from one address to another may also want some work done, such as running piping to connect a gas room heater, etc., some new electric bulbs and other incidentals or appliances that they have need for now for the first time.

A list of all new accounts is prepared each day by the addressograph department and sent to the stenographic department for the purpose of mailing appreciation letters. After these letters are mailed, this list is returned to the billing department and destroyed by them.

Therefore, it is suggested that in the future this list be sent by the stenographic department to the merchandise department. The various names and addresses can be given to the district salesmen to call on the customers and solicit their needs before the customer finally comes to town and possibly buys elsewhere.

During the year 1925, a total of 121,044 applications were completed as follows:

Set meters	39,118
Make actives	52,491
Change names	29,435

These totals include both gas and electric. Thus, this represents approximately 60,000 additional sales contacts and opportunities for the sale of merchandise each year.

The list showing these prospects can be had without any outlay or cost on the part of the merchandise department.

New U.G.I. Kitchen

(Continued from page 440)

partment vegetable steamer, a steam table and a plate heater.

Though the establishment has been in operation but a short time every indication now is that its results will exceed the expectations of its designers. It is rated at 1000 meals per service. At present it serves about 800 persons per meal and judging from the speed with which this is done several hundred more could be served without taxing its capacity. This is due primarily to the flexibility of all gas equipment. Kitchen experts who witness its operation are impressed by the dispatch with which meals are prepared and the ease with which cleanliness is maintained.

Gas Better Than "Gas"

(Continued from page 416)

in gasoline, would amount to about two cents (gasoline at 20¢ per gallon), whereas the cost of 11,100 B.t.u. of natural gas at as high as 75 cents per 1000 cu.ft. would amount to only about 7.5 mills or about three-quarters of a cent. There is no immediate danger, however, of natural gas-burning automobiles displacing gasoline-burning ones, due to the lack of adequate storage space for natural gas fuel.

OUR NEW MEMBERS

GAS COMPANY MEMBERS

The Christchurch Gas Coal & Coke Co., Ltd., 77-79 Worcester St., Christchurch, N. Z.
Ohio Electric Power Co., Oberlin, Ohio.
Rosario de Santa Fe Gas Co., Rosario de Santa Fe, Argentina, S. A.
Australian Gas Light Co., The Sydney, New South Wales, Australia.
Dayton Power & Light Co., The, Dayton, O.
Ohio Electric Power Co., Oberlin, O.

HOLDING COMPANY MEMBER

Electric Management & Engineering Corp., New York, N. Y.
United Public Service Co., 100 West Monroe St., Chicago, Ill.

MANUFACTURER COMPANY MEMBERS

Campbell-Hausfeld Co., The, Harrison, O.
Mid-West Incinerator Corp., Chicago, Ill.
Claus Manufacturing Co., Milwaukee, Wis.
Jackes-Evans Mfg. Co., St. Louis, Mo.
Rand Kardex Service Corp., Tonawanda, N. Y.
F. W. Shepler Stove Co., 1312-14 Sheffield St., N. S., Pittsburgh, Pa.
Noyes & Nutter Mfg. Co., 107-111 Pickering Sq., Bangor, Maine.
The Superior Screw & Bolt Mfg. Co., East 93 St. & Aetna Road, Cleveland, Ohio.
Olive Stove Works, 501-523 Railroad St., Rochester, Pa.
Standard Calorimeter Co., 606—12th St., East Moline, Illinois.
Ironton Stove & Mfg. Co., Ironton, Ohio.
Holbroook, Merrill & Stetson, 665 Sixth St., San Francisco, California.
Groble Gas Regulator Co., Anderson, Ind.
Anderson Stove Co., Anderson, Ind.
Link-Belt Co., Chicago, Ill.
Spencer Thermostat Co., Cambridge, Mass.
Lunkenheimer Co., The, Cincinnati, O.
Leonard Metal Works, Kankakee, Ill.

ASSOCIATE COMPANY MEMBER

Hudson Valley Coke & Products Corp., Troy, N. Y.
Utilities Publication Co., 431 So. Dearborn St., Chicago, Ill.
Gas Industry Magazine, 97 Ashland Ave., Buffalo, N. Y.

ACTIVE MEMBERS

Hoo, Ang-Kai, The Koppers Co., Pittsburgh, Pa.
Raab, Joseph H., Westchester Lighting Co., Mt. Vernon, N. Y.
Kleck, Carl F., Sargent & Lundy Inc., Chicago, Ill.
Carter, Francis P., Westchester Lighting Co., Mt. Vernon, N. Y.
Fottrell, E. J., National Gas Council, London, England
Beber, Joseph W., Westchester Lighting Co., Yonkers, N. Y.
Heynacher, Walter, Moto Gas Machine Co., Minneapolis, Minn.
Butler, Walter P., Moto Gas Machine Co., Minneapolis, Minn.
Mackenzie, John, Moto Gas Machine Co., Minneapolis, Minn.
Richardson, George P., Isbell-Porter Co., Newark, N. J.
Sweatt, Harold W., Minneapolis Heat Regulator Co., Minneapolis, Minn.
Karrer, Sebastian, Consolidated Gas Electric Light & Power Co., Baltimore, Md.
Rollins, Stephen R., Consolidated Gas Electric Light & Power Co., Baltimore, Md.
Williams, Albert B., Consolidated Gas Electric Light & Power Co., Baltimore, Md.
Reiter, Fred M., Dayton Power & Light Co., Dayton, O.
Borland, John, Consolidated Gas Electric Light & Power Co., Baltimore, Md.
McAvity, Ronald A., New Brunswick Power Co., St. Johns, N. B.
Campbell, Wilbert H., Servel Corp., New York, N. Y.
Linsley, Ray K., Bristol & Plainville Electric Co., Bristol, Conn.
Crilly, Roger L., Elizabethtown Consolidated Gas Co., Elizabeth, N. J.
Clemmitt, Willis B., Consolidated Gas Electric Light & Power Co., Baltimore, Md.
Wolff, William M., American Gas Products Corp., New York, N. Y.
Groth, Walter G., Middle West Utilities Co., Chicago, Ill.
Smith, Charles E., Cribben & Sexton Co., Portland, Ore.
Nichols, V. J., Cribben & Sexton Co., Chicago, Ill.
Wunder, A. D., Cribben & Sexton Co., San Francisco, Calif.
Frazier, C. C., Cribben & Sexton Co., Denver, Colo.
Clinton, Geo. D., Cribben & Sexton Co., Chicago, Ill.
Kurtz, Frank B., Cribben & Sexton Co., Chicago, Ill.
Springstead, Henry J., J. B. Slattery & Bro., Brooklyn, N. Y.
McCoy, John T., Massachusetts Institute of Technology, Cambridge, Mass.
Napier, David W., Northern Union Gas Co., Bronx, N. Y.
Vail, George J., Bronx Gas & Electric Co., Bronx, N. Y.
Koch, Albert W., Philadelphia Gas Range Co., Philadelphia, Pa.
Snyder, Cecil D., St. Joseph Gas Co., St. Joseph, Mo.
Hasbrouck, Henry C., Kentucky-Tennessee Light & Power Co., New York, N. Y.
Coryell, Ralph L., Consolidated Gas Co. of N. Y., New York, N. Y.
McCoy, William P., Abendroth Bros., Port Chester, N. Y.
Murphy, William J., Public Service Production Co., Newark, N. J.
Barnard, John F., Goshen Illuminating Co., Goshen, N. Y.

Tully, Thomas F., Consolidated Gas. Co. of N. Y., New York, N. Y.
Gibson, William R., The Gurney Foundry Co. Ltd., Toronto, Ont.
Dollinger, Robert S., Public Service Electric & Gas Co., Newark, N. J.
Bartlett, C. Edwin, Ruud Manufacturing Co., Philadelphia, Pa.
Kendall, Theodore H., Equitable Gas Co., Pittsburgh, Pa.
Brown, George Walker, Equitable Gas Co., Pittsburgh, Pa.
Stuart, Gordon W., Equitable Gas Co., Pittsburgh, Pa.
Baker, A. W., Kansas City Gas Co., Kansas City, Mo.
Schram, Waldo W., Northern Indiana Public Service Co., Hammond, Ind.
Bowersox, George, Southern California Gas Co., Los Angeles, Calif.
Tappan, H. L., Central Indiana Gas Co., Anderson, Ind.
Young, Wm. B., W. E. Lamneck Co., Philadelphia, Pa.
Nacovsky, William, Consolidated Gas Co. of N. Y., New York, N. Y.
Schuldt, Elmer F., The Peoples Gas Light & Coke Co., Chicago, Ill.
Henderson, J. R., Monongahela West Penn Public Service Co., Fairmont, W. Va.
Dexter, Harris E., Central Hudson Gas & Electric Corp., Poughkeepsie, N. Y.
Mundy, Roswell F., Domestic Laundry Equipment Corp., New York, N. Y.
Tonkin, John B., The Peoples Natural Gas Co., Pittsburgh, Pa.
Weed, Irving, 82 Lafayette Ave., Brooklyn, N. Y.
Goetsch E. H., The Laclede Gas Light Co., St. Louis, Mo.
Wiley, C. H., Laclede Gas Light Co., St. Louis, Mo.
Clancy, John J., Laclede Gas Light Co., St. Louis, Mo.
Beardsley, Alling P., Calco Chemical Co., Bound Brook, N. J.
Trumbull, Glen R., General Engineering & Management Corp., New York, N. Y.
van Ackeren, Jos., The Koppers Co., Pittsburgh, Pa.
Kelso, Beecher O., City of Ft. Myers Gas Dept., Ft. Myers, Fla.
Montzheimer, Arthur, Bryant Heater & Manufacturing Co., Detroit, Mich.
Moore, Louis P., The Peoples Gas Light & Coke Co., Chicago, Ill.
Hazelton, Andrew J., James B. Clow & Sons, Kansas City, Mo.
Otterbein, Edwin J., Peoples Light Co., Davenport, Ia.
Kingsley, Earl M., Central Indiana Gas Co., Anderson, Ind.
Kelly, Thos. E., Cribben & Sexton Co., Chicago, Ill.
Vandaveer, Frederick Ewart, A. G. A. Testing Laboratory, Cleveland, O.
Roberts, John H., Pacific Gasteam Co., San Francisco, Calif.
Wiesner, Paul C., Adirondack Power & Light Corp., Schenectady, N. Y.
Trainer, James England, W. E. Lamneck Co., Columbus, O.
Nordheim, Henry A., Washington Gas & Coke Co., Washington, Ind.
Stokke, O. C., Northwestern Public Service Co., Huron, S. D.
Dugger, Henry B., The Lattimer-Stevens Co., Columbus, O.
Oberfell, G. G., Phillips Petroleum Co., Bartlesville, Okla.
Thomas, Rosswell Wilder, Phillips Petroleum Co., Bartlesville, Okla.
East, Leo H., Rochester Gas & Electric Corp., Rochester, N. Y.
Jones, Herbert C., Arlington Gas Light Co., Arlington, Mass.
Hall, Charles Arnold, Franklun Fuel Co., New York, N. Y.
Redding, O. D., The Lattimer-Stevens Co., Columbus, O.
Cohen, Edward, Audit Service System, Waterbury, Conn.
Simonds, O. Howard, Electric Bond & Share Co., New York, N. Y.
Boyd, Drury T., Cities Service Co., New York, N. Y.
Hess, Jas. R., North Shore Gas Co., Waukegan, Ill.
Murray, Addison E., Mississippi Power & Light Co., Jackson, Miss.
Ribley, Chas. F., Adirondack Power & Light Corp., Schenectady, N. Y.
Sheppard, W. L., Pittsburgh Coal Co., Pittsburgh, Pa.
Wilson, Walter H., Minneapolis Heat Regulator Co., New York, N. Y.
Goodwin, Jr., Harold, Columbia Engineering & Management Corp., New York, N. Y.
Lefferson, LeRoy, Electric Bond & Share Co., New York, N. Y.
Stryker, A. R., St. Joseph Gas Co., St. Joseph, Mo.
Balogh, Stephen Ignatius, M. E., American Gas & Electric Co., New York City.
Meyers, Frank C., The St. Louis County Gas Co., Webster Groves, Mo.
Gordon, David L., Equitable Gas Co., Pittsburgh, Pa.
Osterman, Arthur A., Equitable Gas Co., Pittsburgh, Pa.
Faber, William F., General Oil Gas Corp., Irvington, N. J.
Morrison, R. H., United Public Service Co., Chicago, Ill.
Stahl, Nicholas, United Public Service Co., Chicago, Ill.
O'Dea, Gerald M., South Australian Gas Co., Adelaide, Australia.
Crahan, Bernard Earl, Detroit City Gas Co., Detroit, Michigan.
Sanderson, M. C., Burroughs Adding Machine Co., Newark, N. J.
Jones, Norden R., Malden & Melrose Gas Light Co., Malden, Mass.
Almert, Harold, Room 3001, 61 Broadway, New York City.

Associations Affiliated with A. G. A.

K. R. Boyes, Secretary

Canadian Gas Association
Pres.—P. V. Byrnes, United Gas & Fuel Co., Hamilton, Ont.
Sec.-Tr.—G. W. Allen, 7 Astley Avenue, Toronto.
Conv., Hamilton, Ont., 1928.

Empire State Gas and Electric Association
Pres.—H. M. Brundage, Consolidated Gas Co. of New York, New York, N. Y.
Chairman Gas Section—J. E. Cooper, Utica Gas & Electric Co., Utica, N. Y.
Sec.—C. H. B. Chapin, Grand Central Terminal, New York, N. Y.
Conv., Lake Placid Club, Lake Placid, N. Y., Oct. 6 & 7, 1927.

Illinois Gas Association
Pres.—P. D. Warren, The Peoples Gas Light & Coke Co., Chicago, Ill.
Sec.-Tr.—R. V. Prather, 305 Illinois Mine Workers Bldg., Springfield, Ill.
Conv., 1928.

Indiana Public Utility Association—Gas Section
Pres.—I. C. Shepard, Southern Indiana Gas & Elec. Co., Evansville, Ind.
Sec.-Tr.—F. B. Tracy, Central Indiana Gas Co., Tracy, Ind.
Conv., 1928.

Michigan Gas Association
Pres.—C. R. Henderson, Washtenaw Gas Co., Ann Arbor, Mich.
Sec.-Tr.—A. G. Schroeder, Grand Rapids Gas Light Co., Grand Rapids, Mich.
Conv., Grand Hotel, Mackinac Island, Mich., July 5, 6, 7, 1927.

Mid West Gas Association
Pres.—C. A. Nash, United Light & Railway Co., Davenport, Iowa.
Sec.-Tr.—A. W. Schmidt, Des Moines Gas Co., Des Moines, Iowa.
Conv., 1928.

Missouri Association of Public Utilities
Pres.—W. H. Henby, St. Louis County Water Co., St. Louis, Mo.
Sec.-Tr.—F. D. Beardslee, 315 N. 12th St., St. Louis, Mo.
Conv., 1928.

New England Gas Association
Pres.—William Gould, Gas and Electric Improvement Co., Boston, Mass.
Secretary—E. A. Taylor, 100 Weybosset St., Providence, R. I.
Chairman Operating Div.—A. H. Scott, New Britain Gas Light Co., New Britain, Conn.
Secretary Operating Div.—F. E. Drake, Lynn Gas & Electric Co., Lynn, Mass.
Pres. Sales Div.—M. B. Webber, Marlboro-Hudson Gas Co., Boston, Mass.
Sec.-Tr.—Sales Div.—J. H. Sumner, 719 Massachusetts Ave., Cambridge, Mass.
Pres. Industrial Div.—R. J. Phelon, Worcester Gas Light Co., Worcester, Mass.
Sec.-Tr. Industrial Div.—J. J. Winn, Jr., Fall River Gas Works Co., Fall River, Mass.
Conv., 1928.

New Jersey Gas Association
Pres.—J. L. Conover, Public Service Electric & Gas Co., Newark, N. J.
Sec.-Tr.—Louis Stoecker, Public Service Electric & Gas Co., Newark, N. J.
Conv., 1928.

Oklahoma Utilities Association
Pres.—E. R. Ernsberger, Southwestern Light & Power Co., Oklahoma City, Okla.
Mgr.—E. F. McKay, Oklahoma City, Okla.
Conv., second week March, 1928.

Pacific Coast Gas Association
Pres.—W. S. Yard, Pacific Gas & Electric Co., San Francisco, Calif.
Exec. Sec.—Clifford Johnstone, 447 Sutter St., San Francisco, Calif.
Conv., Santa Cruz, Calif., Sept. 12-16, 1927.

Pennsylvania Gas Association
Pres.—J. A. Weiser, Peoples Light Co., Pittston, Pa.
Sec.-Tr.—Geo. L. Cullen, Harrisburg Gas Co., Harrisburg, Pa.
Conv., 1928.

Southern Gas Association
Pres.—P. S. Arkwright, Georgia Railway & Power Co., Atlanta, Ga.
Sec.-Tr.—J. P. Connolly, 141 Meeting St., Charleston, S. C.
Conv., 1928.

Southwestern Public Service Association
Pres.—M. T. Walker, Southwestern G & E Co., Shreveport, La.
Chairman Gas Section—C. M. Thompson, Texas Power & Light Co., Waco, Texas.
Sec.—E. N. Willis, 403 Slaughter Bldg., Dallas, Texas.
Conv., 1928.

Wisconsin Utilities Association
Pres.—John St. John, Madison Gas & Electric Co., Madison, Wisc.
Exec.-Sec.—J. N. Cadby, 445 Washington Bldg., Madison, Wisc.
Conv., 1928.

Geographic Divisions

Eastern States Gas Conference
Pres.—H. H. Newman, Public Service Electric & Gas Co., Trenton, N. J.
Sec.-Tr.—J. C. Smith, Consumers Gas Co., Reading, Pa.
Conv., 1928.

Ninth Annual Convention of the American Gas Association
Chicago, Ill. Stevens Hotel Oct. 10-14, 1927

Employment Bureau

(Address All Communications to Key Number)

SERVICES REQUIRED

SALESMEN—Large Public Utility Company operating in Central New York and many other states desires to employ several securities salesmen to sell company securities. Excellent opportunity. State salary, age, experience, married or single. Address A. G. A.
Key No. 080.

SALESMAN—Chiefly for gas-fired steam radiators, also other gas appliances to work in New York City. One acquainted with plumbing and heating trade preferred. Salary and commission basis. Address A. G. A.
Key No. 094.

A PROGRESSIVE Gas Company in Mass. has an opening in its Industrial Gas Engineering Department for a Technical College Graduate to sell gas for industrial uses. State age, education, experience, and salary desired. A fine opportunity for the right young man. Address A. G. A.
Key No. 095.

SHOP FOREMAN—Wanted by Company operating in the Metropolitan District of New York City, 25,000 Meters. Must be thoroughly familiar with all classes of work on consumers' premises, industrial appliances, routing and transportation. Give age, experience and compensation desired. References will be considered confidential if requested. Address A. G. A.
Key No. 097.

DIVIDEND DEPT. SUPERVISOR—Large public utility system with principal accounting offices located in New York State (outside New York City) requires the services of man capable of assuming supervision of Dividend Paying Department for approximately 50,000 holders and growing rapidly. Accounting experience desirable; knowledge of dividend work necessary. State age, experience, religion, present employer and salary expected. Information will be considered strictly confidential. Address A. G. A.
Key No. 0104.

PUBLIC UTILITY ACCOUNTANT—A splendid opportunity for several men under 35 is available in Accounting Department of large public utility system whose principal accounting office is in New York State. Applicant must have accounting education as well as familiarity with modern public utility accounting methods. Position is in newly created unit to engage in revision of present and planning of new accounting methods throughout system. State age, experience, religion, nationality, present employer and salary expected. Information to be considered strictly confidential. Address A. G. A.
Key No. 0105.

WANTED—Sales Representatives for industrial gas appliances and burners by manufacturer of trade name line. Commission. Have openings in Chicago, St. Louis and a few other industrial centres. Address A. G. A.
Key No. 0106.

SERVICES OFFERED

AGGRESSIVE COMMERCIAL MANAGER—34 years of age, available October or November. Thoroughly familiar, Industrial, Commercial and Domestic Sales Promotion. Address A. G. A.
Key No. 220.

ACCOUNTANT and Office Manager with wide experience in management, purchasing and all office details. Address A. G. A.
Key No. 223.

POSITION wanted as Superintendent of small gas company or as General Foreman of large plant. Approximately seventeen years' experience in all branches of manufacture and distribution, high and low pressure systems. Address A. G. A.
Key No. 224.

POSITION as manager of small gas or combination gas and electric property or as commercial manager of a larger property by a man thoroughly reliable with wide experience and a record for producing results. Address A. G. A.
Key No. 226.

CHEMICAL ENGINEER—with 7 years' experience in the testing and developing of different classes of gas appliances also familiar with the testing and utilization of natural gas and manufactured gas—A-1 references. Address A. G. A.
Key No. 227.

YOUNG ENGINEER—22 years of age, unmarried, with no objection to any part of the country wishes a position as Industrial Engineer in the Gas Industry. Has a knowledge of applications of heat and how to compute requirements. Employed at present as Assistant Industrial Engineer. Address A. G. A.
Key No. 228.

A GRADUATE of California University desires a position as Private Secretary and Stenographer, has considerable experience in Utility work and can give satisfactory references. Address A. G. A.
Key No. 229.

COMMERCIAL OR SALES DEPARTMENT MANAGER—15 years' experience in new business department and appliance sales activities and management, with gas and electric companies. Three years purchasing department manager, Technical University graduate. Desires connection with large company as commercial or merchandising manager, or to supervise commercial activities for a group of properties. Service available on short notice. References include present employer. Address A. G. A.
Key No. 230.

POSITION—Sales Department with manufacturer of gas appliances or gas company. Experience includes executive training. Would prefer position in the East. References. Address A. G. A.
Key No. 231.

EXECUTIVE—Unusually broad training and experience operating and managing utilities—gas, electric, water, ice; directing new business activities, commercial and public relations; cost analysis; rate designing; investigation, purchase and sale of properties, etc. Location immaterial. Present address, New York. Address A. G. A.
Key No. 232.

A NOMINAL SALARY that any small plant can afford with a percentage of savings earned, based on the previous five years' operation is all that I ask as Manager or Superintendent of a small gas company or Operating Engineer of a larger company. Address A. G. A.
Key. No. 233.

CHEMICAL ENGINEER, fifteen years' experience water and coal gas, desires position where results count. Chemical control of operation especially water gas. Address A. G. A.
Key No. 234.

WANTED—Position by young woman, B.S. in Chemistry as technologist, in library or in home service department. Nine Years' experience. Address A. G. A.
Key No. 235.

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